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PART I.

ARTICLE I.

THE RETROSPECTIVE ADDRESS

DELIVERED AT THE

NINTH ANNIVERSARY MEETING

OF THE

PROVINCIAL

MEDICAL AND SURGICAL ASSOCIATION,

HELD AT YORK, AUGUST 4th and 5th, 1841.

BY ROBERT J. N. STREETEN, M.D.,
Physician to the Dispensary, Worcester.

In taking a retrospective view of what has occurred worthy of notice in medical science, and of the improvements in medical practice during the period to which these observations refer, two courses might be pursued. In the one of these the retrospect might be made the occasion of laying before you certain general observations illustrating the peculiar opinions which I might myself entertain upon the various questions requiring to be noticed; the other method would embody a condensed summary of the

progress actually made in the several branches of inquiry. By adopting the former of these methods the object might have been accomplished at a much less expense of time and labour, and perhaps also, by the introduction of illustrations and reflections, the address have been made more immediately interesting. I have however thought that by pursuing the latter method a much more comprehensive and correct account might be brought before you. It is moreover the plan which has been so ably adopted by those eminent individuals who have preceded me, and is also the course followed in many of those truly excellent institutions for the cultivation of general science which assist in giving a character to the existing age. Trusting to experience your indulgence for deficiencies and imperfections, both of matter and manner, I proceed at once to solicit your attention to the details which I have to lay before you.

ANATOMY AND PHYSIOLOGY.

The additions made to our knowledge in anatomy possess considerable interest. They have chiefly arisen from the close attention now paid to microscopical researches, and consequently belong rather to the department of general or structural anatomy, the anatomy of tissues, than to what is commonly termed descriptive anatomy. Physiology continues also to make considerable progress, especially in those departments which are connected with the nervous system. For various reasons I am induced to class these two branches of medical science

together, and to bring the facts relating to them under your notice in connection, rather than distract the attention by reserving for separate consideration, the function and the structure through which it is manifested.

The observations on the structure of normal and adventitious bone, read before the Royal Society by Mr. Alfred Smee,* will first require our notice. The author states that in thin slices of bone properly prepared for the microscope, the canals of Havers, which run for the most part in the direction of the longitudinal axis of the bone, may be seen to be surrounded with small irregular bodies. These minute bodies are arranged in circles around the canals, and a row of similar corpuscules is also to be observed running round both the exterior edge of the bone and the edge of the medullary cavity. The corpuscules communicate with the Haversian canals and with the margins of the bone by numerous fine lines; and a similar communication takes place between the corpuscules of the neighbouring canals. Mr. Smee enters into various details and experiments, from which the inference is drawn that the corpuscules themselves, in all instances wherever they occur, whether in normal or adventitious bone, are hollow, or of the nature of cellules, and that the apparent lines of junction are tubes of communication passing from the corpuscules or cells to the Haversian canals, to the margins of the bone, or to each other. The intermediate structure of the bone between these bodies exhibits, under the highest magnifying pow-

* See *London Medical Gazette*, November 20th, 1840.

ers, nothing more than a transparent homogeneous texture. The laminæ of other authors would appear to exist only as the result of the ingenuity of the anatomist—the shaft of a long bone consisting merely of a large medullary cavity, surrounded with rows of the corpuscules and corpuscular lines, above described, and a number of Haversian canals, with their series of corpuscules around them.

The researches undertaken by M. Flourens during the early part of the preceding year, upon the action of madder on the bones, have been since continued; and he has succeded in showing by this means that the longitudinal growth of bones takes place at either extremity of the long bones.* This fact had before been indicated by some ingenious experiments of Duhamel and John Hunter of another kind; but although the colouring of the layer of bone deposited during the feeding of animals with madder had been made use of to detect the growth of bone in thickness, the application of the same experiment to show the growth in a longitudinal direction would not seem to have been made.

Dr. Knox has recently recorded† an instance of the occurrence of a supra-condyloid process in the human humerus, similar to what is found in the tiger, jaguar, and other carnivorous animals. This circumstance derives considerable interest from the acute conjecture which had previously been put forth by Dr. Knox, respecting an irregularity in the course of the humeral artery and median nerve,

* *Gazette Médicale de Paris, Feb.* 20th, 1841.

† *Edinburgh Medical and Surgical Journal*, July, 1841, p. 125.

as likely to occur in connection with such a deviation from the usual form of the bone. The conjecture was founded on the principle that the course of the artery and nerve would follow the law of deformation; and accordingly in the instance referred to, it was found that the supra-condyloid process was connected with the inner condyle of the humerus by means of a ligament or aponeurotic expansion, the artery and nerve deviating from their usual course to pass behind the process, in the groove half osseous, half ligamentous, thus formed,—being the precise conformation found in the jaguar, with this difference, that the canal in man is partly ligamentous, whereas in the animal referred to it is entirely osseous.

The same excellent anatomist has made some observations and experiments to show that the use of the round ligament of the human thigh bone is to check rotation.* Mr. Mayo had already advanced a similar opinion, but limited the action of the ligament to the inward direction. The experiments of Dr. Knox are intended to prove that rotation outwards is in like manner checked; but establish also the curious fact that in the absence or removal of the round ligament the motions of the joint are as effectually checked by the capsular ligament. It is probable therefore that some other use of the round ligament must be sought than that assigned to it by Dr. Knox. Which of those attributed to it by the many celebrated authors who have treated of this subject may be the correct one, it is not here the place to discuss.

* *Edinburgh Medical and Surgical Journal*, July, 1811, p. 128.

The ligament of the cauda equina, instead of being a common unyielding ligament, as is usually thought by anatomists in general, has been ascertained by Dr. Macartney* to be endowed with a greater degree of elasticity than any other tissue in the body, admitting even of an extension to one-third more than its proper length. This degree of elasticity is obviously intended to provide against undue tension of the spinal marrow in the various movements and shocks to which the lower portion of the vertebral column is liable.

It is sufficiently known that a distinction exists in the ultimate fibres of the muscles belonging to the voluntary and involuntary systems, those of the former in the vertebrate tribes being transversely striated, while the latter present no appearance of striæ. Dr. Reichart, of Berlin, has however found† that in the tench, *Cyprinus Tinca*, throughout the whole extent of the intestinal canal only the striated fibres are to be observed, no difference existing in this animal, in this respect, between the structure of the muscles of the involuntary and voluntary systems. Dr. Reichart has not been able to detect a similar deviation in such other species of the genus *Cyprinus* as he has had occasion to examine, nor in any other vertebrated animal. The exception is the more remarkable as in some of the invertebrate tribes, the Crustaceæ, Arachnoideæ, and Insecta, the transversely striated fibre occurs, as well in the muscles of the intestinal canal as in those of the animal or

* *Provincial Medical and Surgical Journal*, October 3rd, 1840.

† *Medicinische Zeitung*, March 10th, 1841.

voluntary system. The minute structure of the voluntary muscles has been recently made the subject of investigation by Mr. W. Bowman, who shows that the primitive fasciculi are not cylindrical but polygonal threads, their sides being more or less flattened where they are in contact with one another. The fibrils of which these fasciculi are composed are marked by alternate dark and light points, the apposition of the segments of which so marked give rise to the transverse striæ, which must consequently exist and in fact do exist throughout the whole interior of the fasciculus. The fibrils are thus composed of segments adhering to each other in a longitudinal direction, but having likewise a lateral adhesion, and forming a series of laminæ or discs into which each fasciculus may be divided, the transverse striæ of the fasciculus being the edges or focal sections of these discs. Each fasciculus is described as being invested with a tubular membranous sheath of extreme delicacy and transparency. In muscular contractions the author conceives that the discs of the fasciculi become approximated, flattened, and expanded, the fasciculi themselves becoming at the same time shorter and thicker. The paper in which these observations are detailed has been read before the Royal Society, and is illustrated with drawings of the microscopic appearances.*

In relation to the disputed subject of muscular contractility, which of late some distinguished physiologists have been inclined to consider as immediately depending upon the nervous system, it

* See *Edinburgh New Philosophical Journal*, October, 1840, p. 422.

has been shown by Dr. J. Reid* that the objections urged against the views maintained by Haller of the innate contractility of the muscular system are inconclusive. The experiments of Müller, in which division of the ischiatic nerve was followed after a time by loss of contractility in the muscles supplied by it, have been explained by attributing the ultimate loss of power to the defective nutrition resulting. This explanation Dr. Reid has proved to be correct by his ingenious and well-devised experiments; and although the facts related by Müller are perfectly correct, the conclusion drawn from them in favour of the neurological doctrine cannot be sustained. At present therefore the evidence preponderates, as Dr. Reid states, considerably in favour of the Hallerian doctrine.

A new muscle has been discovered by Professor Hyrtl, of Prague,† passing from the styloid process to the cartilaginous portion of the external meatus. It is a mere collection of fibres, taking its origin on the styloid process above that of the stylo-glossus; it passes upwards on the outer surface of the process, and is inserted by a radiating tendon into the lowest prominence of the cartilaginous meatus. The muscle is said to occur in about one of every six bodies, and its action would seem to be to depress the external ear, and to dilate the meatus.

The recent operations for strabismus have, among other results, drawn the attention of anatomists and physiologists to the connections and functions of the

* *Edinburgh Monthly Journal of Medical Science*, May, 1841.

† *Medic. Jahrb. des k. k. Östirreich. Staates. Bd. xxx. St.* 3, in *London Medical Gazette*, December 11th, 1840.

muscles of the eye. Experiments and observations have been made by Mr. Duffin* and Mr. Hall, of Manchester,† on the action of these muscles. At present, little definite information beyond that which we before possessed has resulted; but with reference to the oblique muscles Mr. Hall is inclined to conclude "that the uncombined action of the superior oblique is to rotate the eye downward and outward, though to a less extent than can be attained by the external and inferior rectus acting together; that the superior oblique alone never abducts the eye; that the inferior oblique, acting by itself, rotates the eyeball so as to direct the cornea upwards and inwards, but not to the same extent as that which results from the full contraction of the superior and internal rectus combined; that when both oblique muscles act consentaneously, the recti being passive, the eye is slightly drawn forwards and inwards, and the cornea directed inward." Dr. Hocken, of Exeter,‡ Mr. Walker, and other gentlemen, have also turned their attention to this point; but the most important of the views hitherto proposed are those set forth by Professor Hueck, of Dorpat, and since confirmed by the experiments of A. W. Volkmann, relating especially to the functions performed by the oblique muscles. The general result of these experiments is that the recti muscles determine the direction of the visual axis, and, this being fixed, the oblique muscles rotate the eyeball upon its axis, so as to allow the rays of

* *London Medical Gazette*, October 16th, 1840.

† *London Medical Gazette*, January 1st, 1841.

‡ *London Medical Gazette*, February 19th, 1841.

light, from any object and in any position, to fall on identical spots of the retina.*

The results of the researches of Dr. Foville into the anatomical structure of the brain, recently laid before the Academie Royale de Medecine, are of the highest interest and importance. These investigations, which have been carried on for some years, have already in part become known, and a notice of the more important details was brought before the Association by my predecessor, Dr. Scott. The inferences drawn by Dr. Foville from his later researches are, first, that the fibrous parts of the brain are conductors, some from without to within, others from within to without; that these conducting parts may be distinguished into afferentes and efferentes; that the distinct course of both the one and the other may be demonstrated; that the first are inserted especially into the circumference of the gray substance, and the second into its internal surface; that the afferent conductors are those fibres which are intermediate between the posterior parts of the spinal marrow, the optic and olfactory nerves, and the circumference of the convolutions, and that the efferent are those parts connecting the internal surface of the convolutions with the anterior pyramids: second, that the gray substance of the convolutions, intermediate between the two preceding orders of fibrous parts, seems to be the material substance through the instrumentality of which the will directs the movements of the body.† M. Bazin, of Bour-

* *Archiv für Anatomie, Physiologie, &c.*, 1840, in *British and Foreign Medical Review*, April, 1841, p. 521.

† *Provincial Medical and Surgical Journal*, April 17th and 24th, 1841.

deaux, would appear to have arrived at some conclusions nearly approaching to those of Dr. Foville,* especially in respect to the intermediate character of the cineritious structure, an opinion indeed which has already been put forth by Mr. Solly† and other writers on the subject.

Dr. John Reid has made some observations on the anatomy of the medulla oblongata,‡ in which he attempts to solve the difficulty of the origin of certain motor nerves from points apparently posterior to the origin of the anterior roots of the spinal nerves. He shows that the decussating fibres from the anterior or pyramidal column do not pass into the corresponding column of the opposite side, but cross into the middle or restiform column, and that the olivary columns, or that portion which is connected with the olivary bodies and their prolongation upwards, and to which certain of these nerves can be traced, though thrown back at the upper part of the medulla oblongata, really compose the greater part of the anterior columns below the decussation, and when traced downwards are seen to afford attachments to the anterior roots of the first and second cervical nerves, continuing their course also in the line of the other anterior roots of the spinal nerves.

Investigations into the physiology of the nervous system continue to be carried on with great assiduity. To give an analysis of these, commensurate with their extent and importance, would alone

* *L'Experience*, August 20th, 1840.

† *The Human Brain, &c.*, 1836, p. 19.

‡ *Edinburgh Medical and Surgical Journal*, January, 1841, p. 12.

exceed the limits which can be allotted to a retrospect of this description. In the present instance it will be impossible to do more than select the most prominent, and indicate the conclusions arrived at. From a comparison of cases of cerebral and spinal disease with the results of the experiments of M. Flourens and others on the brain and spinal marrow, Dr. Marshall Hall has arrived at the inference, "that the seat of volition is in the cerebrum, and that its action is along the fibres which *decussate* in the medulla oblongata, and that the seat of emotion is below that of volition, and that it acts along fibres which probably do *not* decussate."* The phenomena of emotion and those of the vis nervosa are not only distinct from, but independent of, and frequently opposed to, those of volition. Volition acts "along the intra-vertebral *cord* of cerebral *nerves;* emotion, and the *vis nervosa,* upon the fibres of the *true* spinal *marrow.*" Thus in chorea and paralysis agitans the movements observed, which are opposed to volition and augmented by emotion, depend upon the *vis nervosa,* the motor power of the true spinal marrow.

The motor influences of the cerebral and cervical nerves have been experimented on by Volkmann, who gives as the general result of his experiments, which it may be stated seem to have been carried on with every precaution to avoid sources of error, first, that all the nerves of the head, except the three of special sense, are motor in a greater or less degree; second, each muscle of the head, two of those of the eye excepted, receives its motor power from one nerve only, and therefore the voluntary and

* *Medico-Chirurgical Transactions*, vol. xxiii.

automatic motion of these muscles both depend on the same nerve; third, this was found true of so many animals, that it is probably true of man also; fourth, some muscles of the tongue receive branches from the cervical as well as from the cerebral nerves, a fact by which the defects of speech in disease of the cord are intelligible; fifth, motor nerves may have ganglia on their roots.*

The principle of reflex action has been applied by Dr. Kuerschner† in the examination of the functions of the anterior and posterior strands of the spinal cord, and he has thus in a simple and conclusive manner established that they are respectively and exclusively motor and sensitive. In a decapitated animal the upper portions of the posterior and anterior strands of the spinal cord were successively irritated; no effect followed irritation of the former, but the slightest touch to the latter produced instantaneous motion. No fibres capable of conveying direct motor influences to the muscles exist therefore in the posterior strands. To show that no sensitive fibres exist in the anterior strands, Dr. Kuerschner divided the posterior roots of the nerves of one leg in a decapitated frog. Upon irritating the skin, reflex motion, which should occur only through the medium of sensitive fibres, could not be excited. The experiment was repeated and varied, but without other result; and the inference seems unavoidable that the posterior strands of the spinal cord are exclusively sensitive, the anterior strands exclusively motor.

* *Archiv für Anatomie, Physiologie, &c.*, 1840, in *British and Foreign Medical Review*, July, 1841, p. 239.

† *Archiv für Anatomie, Physiologie, &c.*, 1841, p. 115.

The like conclusion has been arrived at by M. Longet,* from numerous experiments performed upon dogs by means of mechanical irritants and galvanism applied both to the columns of the cord and to the roots of the spinal nerves. M. Longet draws one inference from his experiments which requires farther investigation,—that the reflex action of the spinal marrow is infinitely less in adult animals of the higher orders than in those which are younger, or lower in the animal scale. The inference, if correct, is an important one, as many of the observations connected with the existence of reflex functions have been drawn from experiments performed upon animals belonging to the lower tribes of the vertebratæ.

An attempt has been made by Engelhardt to prove that a relation exists respectively between the upper and lower halves of the spinal cord and the extensor and flexor muscles of the limbs.† These experiments however appear to involve too much destruction to the organization to allow of any well-founded conclusion being drawn from them.

The ganglion described by Arnold as occurring at the communication between the facial and vidian nerves, and considered by Swan and Cruveilhier to be formed in the facial nerve, has recently been shown by Guarini to belong rather to the vidian nerve.‡

* *Revue Médicale*, December, 1840;—*Gazette Médicale de Paris*, January 2nd, 1841.

† *Archiv für Anatomie, Physiologie, &c.*, 1841, in *British and Foreign Medical Review*, July, 1841, p. 235.

‡ *Annali Universali di Medicina* in *Gazette Médicale de Paris, April* 24th, 1841.

An elaborate account of the anatomy of the nerves of the uterus, being a continuation of his former researches, has been published by Dr. Robert Lee,* who now considers it as proved that the human unimpregnated uterus possesses a great system of nerves, which, in accordance with the opinion of Dr. William Hunter, and contrary to that of John Hunter, enlarges with the coats, blood-vessels, and absorbents, during pregnancy; and returns, after parturition, to its original condition before conception took place. The dissections were very carefully performed, and, notwithstanding the objections which have been urged, seem to be conclusive. M. Jobert de Lamballe however, in a memoir on the same subject, read before the Academie des Sciences on the 17th of May last,† asserts that under no circumstances do the uterine nerves undergo any modification during the different stages of life, and consequently denies their increase during pregnancy. This memoir was illustrated by drawings, and the causes of the error of former anatomists are said to have been pointed out. M. Jobert, it seems, was acquainted with the work of Dr. Lee previous to the reading of his memoir; the subject must therefore be considered still to require further illustration.

Every thing connected with the anatomy, physiology, and pathology of the nervous system, is at this time of such paramount interest, that notwithstanding the length to which these observations have

* *The Anatomy of the Nerves of the Uterus,* by Robert Lee, M.D., &c., 1841.

† *Gazette Médicale de Paris,* May 22nd, 1841.

extended, I am unwilling to pass over any general fact. The anastomosis of the nerves is one of this character, and has often been brought in question. If by the term, it be meant to imply a union of nerves or nervous fibrils, similar to the communication which takes place in the vascular system, no instance that I am aware of has hitherto been pointed out. A memoir has however been recently published by A. W. Volkmann* on the anastomoses of the nerves, under which term the author includes the communication of one nerve with another by means of branches passing, not downwards in the course of the nerves, but upwards towards the nervous centres. This arrangement is similar to what is found in the terminal loops, differing from the latter by its occuring, not in isolated fibres, but in whole branches. Anastomoses of this description have been traced by the author in various animals belonging to the mammalia, between the fourth pair of nerves and the first division of the fifth, between the second and third cervical nerves and the accessory, between the cervical nerves and the descending branches of the hypoglossal, &c.; and in some of these in man as well as in the inferior animals.

The absorbents of the brain have been injected and described by F. Arnold, who distinguishes, first, a superficial delicate close network lying in the cellular tissue which connects the arachnoid with the pia mater; second, a deeper and coarser network, also situate in the subserous tissue of the arachnoid;

* *Archiv für Anatomie, Physiologie, &c.*, 1840, in *British and Foreign Medical Review*, July, 1841, p. 236.

and, third, a still coarser network with extremely narrow interspaces, contained in the pia mater. The absorbent trunks take the course of the veins on the surface of the brain and pass with them through the foramina of the skull. In the choroid plexus of the lateral and third ventricles there are also lymphatic networks, the main trunk of which accompanies in its progress the vena magna Galeni. The attempts at injecting the absorbents of the substance of the brain and of the spinal cord have not hitherto been successful.*

Professor Bischoff, of Heidelberg, has attempted to detect the existence of electric currents in the nerves;† but although he employed the most susceptible instruments, he was unable to procure the slightest evidence of their presence. He infers therefore that such currents do not exist, and confirms the opinion already advanced by Müller, that the nerves are themselves the finest electrometers.

An interesting case bearing on the physiology of vision, in which there was inability to distinguish certain colours, has been communicated by Dr. Hays to the American Philosophical Society.‡ The case affords additional evidence of certain laws announced on a former occasion by Dr. Hays as governing this peculiar defect. These laws are, first, that entire inability of distinguishing colours may coexist with a perfect ability of perceiving the forms of objects;

* *London Medical Gazette*, November 27th, 1840.

† *Archiv für Anatomie, Physiologie, &c.*, 1841, *p.* 20.

‡ *Proceedings of the American Philosophical Society*, August to October, 1840, p. 265.

second, that the defect may extend to all but one colour, and in such case the colour recognised is always yellow; third, that the defect may extend to all but two colours, and in such case the colours recognised are always yellow and blue. In the instance in question the individual could distinguish only two colours, and these were, in conformity with the third law, yellow and blue.

An elaborate paper on the Mechanical Functions of the Ear was read before the Medical Section of the British Association at Glasgow, by Dr. Sym, of Ayr,* in which he investigates in succession the mechanical functions of the external ear, of the membrana tympani, of the ossicula, and of the water of the labyrinth. Among the chief points which the author endeavours to establish are the non-vibration of the membrane of the tympanum, the direction, extent and momentum of the motions of the ossicula, and the effects of the water of the labyrinth, cochlea and aqueducts in the phenomena of hearing. He conceives that the water of the labyrinth oscillates over the auditory pulps by the alternate suction and pressure of the stapes, and in this manner excites the sensation of hearing; that the extent of oscillation is regulated by the cochlea, the laminæ of which expand and contract according to the degree of friction to which they are exposed, and that the aqueducts are diverticula for receiving the water displaced by the expanded laminæ.

An able report of the Committees of the British Association for the Advancement of Science, ap-

* *Edinburgh Medical and Surgical Journal*, January, 1841, p. 48.

pointed to investigate the motions and sounds of the heart, has been drawn up by Dr. Clendinning.* The report contains the conclusions deducible from the two series of experiments and observations instituted by these Committees both on the motions and sounds of the heart. Among the most important of these in a practical point of view are, that the order of the motions of the auricles and ventricles is by continuous succession, rather than by alternation of action, the auricles contracting abruptly after the rest or pause, and the ventricles immediately after the auricles ; that the normal systolic action of the auricles is energetic and almost instantaneous, and that the normal auricular diastole is gradual, continuous, and wholly passive ; that the systole of the ventricles is gradual in its development ; that the arterial diastole or pulse perceptibly succeeds to the cardiac systole ; that the first sound of the heart depends partly on the abrupt closure of the auriculo-ventricular valves, but is mainly owing to cardiac muscular tension alone ; that the auricular systole is attended by an intrinsic sound resembling that of the ventricles, but more short, obtuse, and feeble, often difficult of detection, owing to its being absorbed in the louder ventricular systolic sound immediately succeeding ; that the sounds of friction in pericarditis may, when well marked, be expected to be double, and sometimes triple, or more ; that the sounds of the structurally healthy heart are liable to modifications by alterations in the condition of the fluids ; and that the suction influence on the venous circulation, attributed to inspiration by various writers, is well founded.

* *London Medical Gazette*, November 13th, 1840.

M. Dubois, d'Amiens, has laid before the Academie Royale de Medecine a memoir,* the intention of which is to show that the contraction of the capillaries appears to exercise no influence in the propulsion of the blood; that the motion of the blood in the venous capillaries is relatively less rapid than in the arterial, though greater than in the intermediate capillaries, and that the greatest resistance to the impulses of the heart is experienced in this part of the circulating system. It is to be feared however that some of the many intricacies which complicate researches of this character vitiate the observations of the author, and that the difficulties which beset the question of the propulsion of the blood through the capillary system are no less than those in which other branches of the inquiry are involved. The observations of Dr. Holland, of Sheffield,† on the influence of the heart and arteries on the motion of the blood, and his account of the conflicting views entertained by different authorities, are well worthy the attention of those who are engaged in researches upon this subject.

It may be here mentioned that M. Dubois has collected together a number of observations made by himself and others on the numerical force of the pulse in various animals.‡ The extremes hitherto noticed occurred in the heron, in which, according to Prevost and Dumas, the pulsations amounted to two hundred and twenty in a minute, and in the shark, in which,

* *L'Experience*, October 8th, 15th, and 22nd, 1840.

† *Edinburgh Medical and Surgical Journal*, January, 1841, p. 17, and July, 1841, p. 69.

‡ *L'Experience*, August 5th, 1840.

from the observations of Scoresby, they were not more than seven. The observations are neither sufficiently numerous nor so free from doubt as to warrant the legitimate deduction of any inferences; the general results however in some of the higher orders of the vertebrata, as far as they have been noticed, seem to be that in the solipeda and ruminants the pulse is less frequent than in the carnivora and quadrumana; that in the rodentia, and especially in birds, it is the quickest; and that in young animals generally it is more frequent than in adults and those of advanced age.

In the course of an investigation into the minute anatomy of the lungs, with a view of determining the precise seat of pneumonia, Dr. Thomas Williams endeavoured to ascertain whether the capillaries of the pulmonary tissue were disposed in a vascular layer upon the parietes of the air-cells, or whether they were indiscriminately distributed over the intervening cellular spaces. By minute examinations he was enabled to satisfy himself "that they are arranged in a stratified form upon the attenuated and delicate membrane composing the cells which form the cœcal termination of the bronchial tubes, having a delicate tissue, which fills up the meshes of the network, which in the lungs, unlike all other parts, are extremely minute."* This structure brings the lungs within the law of organization established by Müller as governing the formation of glands; the essential elements of every gland, according to this authority, consisting of a plane surface, and a layer

* *Lancet*, January 30th, 1841.

of capillaries ramifying upon it. It has been objected that these capillary vessels are not traced to the arteries from which they arise, and the question has been asked, are they derived from the pulmonary artery or from the bronchial arteries?* The observations read by Dr. Addison before the Royal Medical and Chirurgical Society seem to afford an answer to this question. According to the description given by Dr. Addison† the lung essentially consists of a vast expanse of membrane, the interior of which is exposed to the influence of atmospheric air; and upon the surface, or in the substance of which, are spread out the capillary ramifications of the *pulmonary* artery; these arterial capillaries passing from thence to the exterior of the membrane, to form the pulmonary vein which, throughout its whole course, is found to be situated in the exterior of the aerial cellular structure of the organs.

Much difference of opinion has been entertained as to the changes taking place in asphyxia, the nature of the impediment to the circulation of the blood through the lungs, and the arrestment of the sensorial functions. The ascertaining of these points is of importance, both to a correct understanding of the function of respiration, and in affording a guide by which the treatment of cases of asphyxia may be conducted upon sound principles. Dr. John Reid‡ has submitted the subject to in-

* *Lancet*, February 20th, 1841.

† *London Medical Gazette*, May 7th, 1841;—*Provincial Medical and Surgical Journal*, May 8th, 1841.

‡ *Edinburgh Medical and Surgical Journal*, April, 1841, p. 137.

vestigation, and from experiments conducted with great care, arrives at the conclusions that the venous blood is at first transmitted through the lungs and left side of the heart to the brain; that the functions of the brain and medulla oblongata are enfeebled and suspended, the individual becoming quickly unconscious of external impression; that immediately after the suspension of the sensorial functions the blood is transmitted with difficulty through the capillaries of the lungs, and consequently accumulates at the right side of the heart; and that from the conjoined effect of less blood, and that of a more venous character, being sent along the arteries, the circulation becomes ultimately arrested, and general death ensues. From this it is manifest that the principal object in the treatment of asphyxia is to restore the circulation through the lungs.

It has been shown by Dr. Glover, of Newcastle,* in opposition to the opinions advanced by Sir Everard Home, and generally admitted by physiologists, respecting the functions of the colouring matter of the skin in the dark races of mankind, that black surfaces absorb more heat than white surfaces, and scorch precisely in the ratio of the heat absorbed. Dr. Glover concludes therefore that the absorption of heat goes on to a greater extent in the dark-coloured inhabitants of the tropics than in the European. The dark skin of the negro he thinks places him in the conditions of his climate by causing him to radiate heat at night, and become at that time cooler than a white man placed under similar

* *Edinburgh New Philosophical Journal*, October, 1840, p. 376.

circumstances; while he concurs with Dr. John Davy in attributing much influence to the very perspirable state of the skin in the black in keeping down both the temperature of the skin and of the blood.

The minute anatomy of the liver, so admirably illustrated by Mr. Kiernan, has recently engaged the attention of M. Ernest Lambron, who, by making use of a material for his injections which could be employed cold, (mucilage of gum arabic variously coloured,) succeeded in pushing these farther than had been previously done by Mr. Kiernan. By this means M. Lambron conceives that he has shown that the imaginary figure constructed by Mr. Kiernan from the left lateral ligament, and which was intended to illustrate the structure of the lobules and the presumed anastomoses of the interlobular ducts forming a lobular biliary plexus, is incorrect. According to the statement of M. Lambron* the lobules are composed of minute cellules or utricules, before described by MM. Dujardin and Verger as solid corpuscules, to which they gave the name of glutinous globules—"*globules glutineux*." These cellules he has succeeded in injecting from the biliary duct, and finds them to be polyhedral in form, and arranged more or less regularly round the intra-lobular vein. The injections from the vena portæ, the minute branches of which form the interlobular vein, pass into the interstices of the cellules, and form the lobular venous plexus of Mr. Kiernan. These views possess a high degree of interest, since, if correct, the analogy between the minute structure

* *Archives Générales de Medecine*, January and February, 1841.

of the liver and that of the pulmonary organs becomes yet closer.

In connection with this subject, it may be right to state, as it appears to have escaped the notice of others, that a kind of valvular apparatus has been found by Dr. John Davy in the lower part of the ductus communis choledochus and of the pancreatic duct. It consists of delicate angular processes or projections of their inner coat pointing downwards, and seems to be intended to prevent the ascent of the pancreatic juice into the gall-bladder or liver, and the bile from penetrating into the pancreas.*

A paper was read at the meeting of the British Association for the Advancement of Science, by Dr. Allen Thomson, on the structure of the gastro-intestinal membrane, and of the gastric and intestinal glands. The chief end of the author's observations was to show that in early life the glands have a vesicular structure, and are without any opening, the zone of apertures surrounding the vesicle not communicating, according to Dr. Thomson, with its cavity. The three main points established by the inquiry were, first, the closed vesicular origin of the gastric glands in the child, and their occasional vesicular structure at a more advanced period of life; second, the closed vesicular condition of the solitary glands of the large intestine at the period of birth, and the occasional occurrence of this condition at a more advanced stage; and third, the occasionally open condition of the vesicles of Peyer's glands.

* *British and Foreign Medical Review*, July, 1841, p. 133.

An interesting and important paper on the anatomical relations of the blood vessels of the mother to those of the fœtus in the human species has been given to us by Dr. John Reid,* in which he shows that the placental tufts are projected into the uterine sinuses through the decidua vera, having determined also by injections thrown into the umbilical vein that they were prolongations of the fœtal placental vessels. These tufts were likewise ascertained to be bound down, at various points within the sinuses, by reflections of the inner coat of the venous system of the mother upon their outer surface. The bearing of these observations on the labours of William and John Hunter, and subsequent inquirers, is concisely pointed out.

A new classification of temperaments has been proposed by M. Fourcault.† He recognises, as distinct forms, the nervous, the sanguine, the cellular, the lymphatic, the adipose, the muscular, the sclerous, the gastro-limic, the gastro-pathic, and the erotic. Of these the nervous, the sanguine, and the cellular temperaments, are considered to be the fundamental types, the remaining seven being intermediate or derived forms. The cellular temperament is characterised according to M. Fourcault by a remarkable degree of inertia and debility, and is attributed to a predominance of the cellular tissue. The same predominance carried to excess is conceived to produce the lymphatic temperament. The sclerous temperament is formed to receive those constitutions in which the osseous system is

* *Edinburgh Medical and Surgical Journal*, January, 1841, p. 1.

† *Journal des Connaissances Médico-Chirurgicales*, January, 1841.

remarkably developed. The gastro-limic and gastro-pathic temperaments of M. Fourcault are owing, the former to excessive activity, the latter to excess of sensibility in the digestive system: the latter of these is the same as the melancholic, and is considered, perhaps justly, to be rather a morbid disposition than a general temperament. These speculations may possibly be carried too far, but as indications for the management of disease and of the probable progress and terminations of morbid action, the recognition of the peculiarities of individual structure, and their classification under certain well-marked forms, will be found of great value to the practical physician. Much stress was laid upon them by the ancients, and it admits of question whether the moderns have done wisely in so greatly neglecting the precepts of their predecessors upon this point, which, although involved in erroneous theory, were yet often the result of years of careful observation.

The observations of Dr. Vose, of Liverpool* on some vicarious actions of the human body in health and disease may be noticed here. By this term the author intends to designate the establishment of a physiological process or morbid action, dissimilar from another physiological process or morbid action for which it is substituted, and differing by this dissimilarity from metastasis or translation. The paper does not lay claim to novelty, but has the merit of bringing together a considerable number of facts on a subject which requires further investigation, and is worthy of greater attention than it has hitherto received.

* *Edinburgh Medical and Surgical Journal*, April, 1811, p. 322.

EMBRYOLOGY.

The high degree of interest which attaches to the subject of embryology has a natural tendency to engage for it a considerable share of attention, and many valuable results have been attained from the investigations of various observers, both in this country and on the continent. The minuteness and extreme delicacy of the parts to be examined in the pursuit of these researches, the difficulties to be overcome in displaying them under the field of the microscope so as to obtain a satisfactory view of their conformation and structure, and the care and skill required in the use of the higher magnifying powers, demand, in addition to mental endowments of a very superior class, a degree of patience and steady perseverance, and a nicety of manipulation, possessed by few, and only to be acquired by long practice. Among the latest results arrived at by Dr. Martin Barry,* already well known by his previous investigations on the early development of the embryo, is a confirmation of the correctness of the opinion, now generally entertained, that the germinal vesicle is the essential portion of the ovum; and in his third series of researches he traces the changes which take place in this part during its progress towards maturity. The changes connected with fecundation he conceives to arise in consequence of the introduction of some substance from without into the ovary, and describes and

* *Edinburgh New Philosophical Journal*, July, 1840, p. 84; October, 1840, p. 421; July, 1841, p. 195;—*Edinburgh Medical and Surgical Journal*, April, 1841, p. 474.

figures ova, from which he was led to believe that spermatozoa lay in the fissure of the outer membrane. From the whole series of changes described, it should seem that the germinal vesicle does not burst, dissolve away, or become flattened, on or before fecundation of the ovum, as had been previously supposed.

In direct opposition to these statements are the conclusions arrived at by M. Coste, in a memoir read at the Academie des Sciences on the 26th of April last, the object of which was to show, first, that neither the germinal spot, nor the corpuscules observed in the cavity of the germinal vesicle, can be considered as being endowed with life previous to conception; and, second, that the membrane of the germinal vesicle is absorbed and disappears the instant the ovum becomes detached from the ovary.* On the other hand, M. Lallemand had on a previous occasion laid before the Academy a memoir on the origin and mode of development of zoospermata,† in which he shows, from experiments and microscopical observations, that these spermatic animalcules are secreted by the testicle; and asserts that in like manner the ovaries secrete the ovules, which are living bodies, even before fecundation, becoming perfected in the oviducts after their separation from the ovary. The spermatic animalcules he states are, like all products of secretion, susceptible of being modified by severe disease, diminishing in number, in size, in density, and in vitality. In certain

* *Gazette Médicale de Paris*, May 1st, 1841.

† *Journal des Connaissances Médico-Chirurgicales*, January, 1841;—*Edinburgh Medical and Surgical Journal*, April, 1841, p. 547.

circumstances of disease, and in old age, they may be replaced by pyriform, ovoid, or spherical bodies, which are found also to precede the appearance of the perfect animalculæ at the period of puberty. In a continuation of this memoir* M. Lallemand attempts to deduce the law of reproduction, but adds nothing to what is already known upon the subject; and the speculations into which he enters derive their chief interest from the confirmation apparently lent to them by the discovery by Professor Bischoff, of Heidelberg, and by Dr. Barry, as already alluded to, of zoospermata in intimate connection with the ovum. The curious inference arrived at by Dr. Barry from another part of his researches, taken in connection with those of other observers, "that the fundamental form of all organized beings, from man himself to the simplest plant, is the *single isolated cell,*" is a beautiful extension, and it may be added correction, of the Linnæan axiom, "*omne vivum ex ovo.*"

In connection with this subject I may refer to the interesting lectures of Professor Owen on the development of the embryo, now in course of publication in the *Lancet;* and, as probably connected with irregularities in the development of the embryo, to two singular instances of monstrosity which have been recently recorded in the *Edinburgh Medical and Surgical Journal.* One of these, a case of double monocephalic monster, is related by Dr. Eric Mackay, of Birmingham ;† the other, of a male with

* *Revue Médicale,* December, 1840;—*Journal des Connaissances Médico-Chirugicales,* January, 1841.

† *Edinburgh Medical and Surgical Journal,* January, 1841, p. 76.

two heads, by Mr. Samuel Bromilow, of Liverpool.* An account of the latter was read and the preparation itself exhibited at the Liverpool Medical Association.

ORGANIZATION AND PATHOLOGY OF THE BLOOD.

The researches which have recently taken place into the structure, composition, and pathology of the blood, present many features of interest to the medical philosopher, and promise also to be fruitful in practical results. One of the most curious results is the discovery by Mr. Addison, of Malvern,† of the fibrine globules in the serum, which, by their tendency to separate in certain states of disease, give rise to the formation of the buffy coat. The first change in inflamed blood on its being drawn from the vessels is its separation into two fluid portions, the upper colourless or of a yellow buff colour, the lower red. These portions respectively coagulate, after which the serum separates, part exuding from the upper or buff portion, part from the lower or red portion. Mr. Addison has shown that the colourless portion before coagulation, contrary to the opinion expressed by Müller, contains an immense quantity of globules, which are clear and colourless, and may be readily viewed by transmitted light through the medium of a common lens, and that during the process of coagulation these globules coalesce together in the form of lines, streaks, and films, the coagulum gradually becoming opaque, when its structure can

* *Edinburgh Medical and Surgical Journal*, April, 1841, p. 435.

† *London Medical Gazette*, December, 18th, 1840.

no longer be detected. By maceration of thin slices of fibrine resulting from the coagulation of the liquor sanguinis in clean water for a day or two, the texture under the microscope may be seen, and presents the appearance of the minutest granules, intersected by lines, fibres, and filaments.* Dr. Mandl has indeed made the assertion that he himself is the discoverer of the fibrine globules, but appears only to have observed them in the act of coagulating :—"*En observant la fibrine se coaguler, sous le microscope, dans une goutelette de sang, étendue entre deux verres, nous avons, le premier, démontré que la fibrine se coagule alors en globules ronds, aplatis, isolés.*"† And again, in attempting to show the identity of these fibrinous globules with those of pus, mucus, &c , he observes—"*Nous avons expliqué la formation de ces derniers d'une manière bien simple, en disant que le sang transsudant à travers les vaisseaux sanguins y apparâit avec tous ses élémens, moins les globules qui ne peuvent passer à travers les parois des vaisseaux. Le sérum qui contient la fibrine en dissolution, placé hors de la circulation, donne lieu à une coagulation de la fibrine, et comme le sérum lui-même ne transsude que goutte à goutte, la fibrine elle-même ne peut coaguler qu'en goutellettes, c'est à dire qu'elle forme les petits corpuscules que nous connaissons sous le noms de globules du mucus, du pus, des épanchemens, etc.*"‡ These mechanical globules of Dr. Mandl are evidently not the true fibrine globules of Mr. Addison,

* *London Medical Gazette*, March 26th, 1841.

† *Gazette Médicale de Paris*, July 4th, 1840, p. 419.

‡ *Op. et loc. citat.*

and with the latter gentleman therefore must rest the merit of establishing their existence.

The observations from which Dr. Mandl arrives at the conclusions that the fibrine globules of the blood, as he understands them, the globules of mucus, and those of pus are identical, and that all the globules are the product of the coagulation of the fibrine in the serum which has transuded through the walls of the blood-vessels, by no means therefore establish the identity between the true fibrine globules and those found in mucus and pus.

According to M. Letellier, of St. Lau,* who has also occupied himself with the microscopic examination of the blood and other animal fluids, albumen evidently consists of transparent granules, which become opaque by the action of alcohol and acids. It is hence analogous in its structure to fibrine; and M. Liebeg, of Giessen, has attempted by chemical experiment to establish their identity.† A curious test by which the one may be distinguished from the other has however been pointed out by Dr. Haro, of Metz, which, if his observations be correct, would seem to indicate a difference between the two. Dr. Haro states, that when albumen is subjected to decomposition in water, monads are produced; but when fibrine is so treated, vibriones are the animalcules met with in the fluid.‡

M. Letellier has inferred, as others have done before him, that coagulable lymph contains all the elements of the blood, with the exception of the

* *Journal de Chimie Médicale*, January, 1841.

† *Gazette Médicale de Paris*, April 3rd, 1841.

‡ *Microscopic Journal*, July, 1841.

red colouring matter of the globules, and that pus is a degeneration of these globules.* Dr. Mandl, on the other hand, considers† that both pus and mucus are simply filtered blood, containing all the elements of the blood except the globules, the serum at the same time undergoing alteration, the globules of pus, mucus, &c. being as we have seen derived from the fibrine.

Whether the opinion of Dr. Mandl as to the origin of the pus globules be correct or otherwise, a difference between the blood corpuscules and those of pus seems to have been satisfactorily established by Mr. Gulliver, who, by extending his inquiries among the lower animals, has been led to the conclusion that the globules contained in pus are not mere degenerations of the blood corpuscules, as had been previously supposed by himself and many other eminent pathologists. Following out the researches of Dr. Mandl on the elliptical blood discs of the dromedary and paco (*Auchenia Paco*), Mr. Gulliver discovered that those of the vicugna (*A. Vicugna*) and lama (*A. Glama*) are also elliptical; and from the vicugna, as well as from the paco, he had an opportunity of obtaining some pus which did not materially differ from that of animals with circular blood discs. The pus globules of the vicugna are described as being extremely well defined, spherical and rather less granular on the surface than common, readily exhibiting their central molecules when subjected to the action of sulphurous or acetic acids, and becoming enlarged in water, like those of men

* *Journal de Chimie Médicale*, January, 1841.

† *Gazette Médicale de Paris*, July 4th, 1840.

or other animals. The pus globules of the paco were remarkably clear and well defined, and presented similar characters.*

The highly curious observations made by Mr. John Queckett on the blood discs were brought before the notice of the Association by Dr. Scott. These have since been extended and confirmed, and it would seem that the description of these bodies by Leuwenhoek and some of the earlier observers is singularly correct. Leuwenhoek states that each disc is composed of six smaller ones; and Hewson was aware that the surface of the discs sometimes assumes a granulated appearance. The existence of a nucleus, as described by Hewson, Müller, and other observers, Mr. Queckett has entirely failed in making out.† In this remark he is borne out by M. Letellier, who asserts that it is not possible to prove by the microscope that the red globules of the human blood are formed of a nucleus and pellicle, though he attempts to prove it by other means.‡ Dr. Barry, in the course of his investigations into the development of the embryo, has also been led to examine the blood discs, and to recognize the compound nature of their central portion.§ From these researches, and others connected with the physiology of cellules, the correctness of some of the recent doctrines on the origin of cells would seem to be questionable.

For some years past considerable attention has been devoted to the changes taking place in the

* *Medico-Chirurgical Transactions*, vol xxiii.

† *Microscopic Journal*, July, 1841.

‡ *Journal de Chimie Médicale*, January, 1841.

§ *Edinburgh New Philosophical Journal*, October, 1840, p. 419; July, 1841, p. 197.

blood in different diseases. The more comprehensive and extended investigations entered into by MM. Andral and Gavarret* open to us an enlarged field of research, and exhibit the subject in a more general point of view. Laying aside the more refined and complicated analysis of the blood, as unfitted for purposes of practical utility, they have taken as the basis of their investigations the variations in the more prominent and easily recognised constituents, the fibrine, the globules, the solid parts of the serum, and the water, and adopting the methods of analysis followed by Messrs Prevost and Dumas, and most of the chemists of the day, they take as the proportions of these constituents in a thousand parts of healthy blood—fibrine, 3; globules, 127; solid parts of serum, 80; water, 790. The correctness of this analysis, and the methods by which it is obtained, have been objected to by Dr. Mandl,† who points out various sources of fallacy to which it is liable, but fails to suggest any improved method less open to objection than the one hitherto followed.

In the absence therefore of a more definite and correct mode of effecting the analysis, the methods prescribed by other chemists, and adopted by MM. Andral and Gavarret, must be followed, due allowance being made for the imperfections to

* *Archives Générales de Médecine*, August and September, 1840;—*British and Foreign Medical Review*, January, 1841, p. 242:—See also *Gazette Médicale de Paris*, January 30th and June 12th, 1841;—*Provincial Medical and Surgical Journal*, May 29th, June 5th and 26th, and July 17th and 24th, 1841.

† *Archives Générales de Médecine*, October and November, 1840; and January, 1841.

which they are liable. The results obtained were drawn from a very considerable number of examinations, and with the limitation above indicated seem to be deserving of confidence. The diseases in which the fibrine was found to be augmented are the phlegmasiæ generally and tubercular phthisis, reaching its maximum, ten per thousand, in pneumonia and acute articular rheumatism, and varying with the increase or decline of the symptoms. It has been elsewhere shown by M. Lassaigne that the false membranes thrown out on mucous membranes in a high state of inflammation are formed chiefly of a large proportion of fibrine instead of albumen,* as had been supposed by some anatomists, a circumstance which affords confirmation to these views. The diseases in which the proportion of globules was observed to be increased, or if not increased in reference to the whole mass, their relative proportion to the fibrine augmented, are the pyrexiæ, or fevers, and many congestions and hæmorrhages. The standard assumed is one hundred and twenty-seven per thousand, but in a case of inflammatory fever they reached the proportion of one hundred and eighty-five, that of the fibrine not being augmented. In the majority of congestions and cerebral hæmorrhages the fibrine was found below its normal proportion, while the globules were in excess, or at the healthy standard. Diseases in which the globules of the blood are diminished are dropsies, intermittent fevers, the cachetic state presented by workers in lead, chlorosis, and accidental or abundant hæmorrhages.

* *Provincial Medical and Surgical Journal*, June 19th, 1841.

The lowest proportion observed, twenty-one per thousand, was in one of these latter cases; in chlorosis the proportion descended to thirty-eight, in which disease it rises under the influence of iron. The albumen of the serum is found diminished in albuminuria.

It will be noticed that many of the general facts ascertained by M. Andral were before known; some of the most important of these will be found anticipated in the analyses given by the late Mr. Jennings in the third volume of the *Transactions* of the Association; others have been ascertained by M. Andral himself; but the researches here referred to, at the same time that they are more comprehensive, are distinguished also by several valuable comparative observations upon different diseases, the effects of remedial agents, and altogether by a more extensive application to disease in general. I cannot conclude this subject without referring to Mr. Ancell's lectures on the blood, published in the *Lancet* of last year, as containing much curious and valuable information upon the physiology and pathology of that fluid.

PATHOLOGY AND PRACTICAL MEDICINE.

In directing your attention to this division of the subject, I cannot but observe that the improvements in practical medicine are not always commensurate with the advance of pathology. The reason of this is perhaps in part owing to the circumstance that many of the organic changes giving rise to disease are irremediable in their nature, and in part also

because the nicety of tact and discrimination, both in detecting disease and in prescribing the appropriate treatment, by which the practical physician is distinguished, is incapable of being communicated to others by any descriptive signs which language can employ. A skilful artizan or an expert chemist will be led to devise modes of operation or experiment, and able to accomplish the objects which he may have in view, with means far more scanty than what in less practised hands will fail of producing the very same effects. So likewise in practical medicine, the most successful often obtain the desired end by apparently very simple means, and in a manner which it would be impossible to communicate to others. It is not so much the number of the remedies as the method of employing them which conduces to success; and an acquaintance with the nature and qualities of every therapeutic agent which has ever encumbered the materia medica, will do less towards the cure or relief of disease than the judicious employment and adaptation of a small number, with the use of which we are practically familiar. To judge from the succeeding observations therefore, the knowledge of disease will be found to have made greater progress than the means of remedying it.

Fevers.—Several questions of interest connected with fever have received illustration during the past year. The new edition of the work of M. Louis contains additional evidence in favour of the doctrine that lesion of the glands of Peyer constitutes the anatomical character of typhoid fever. In

considering this subject it is necessary to bear in mind what has not been sufficiently understood in this country,*—the distinction between anatomical character and cause. The conclusion at which M. Louis arrives is that this lesion is *inseparable from the existence of the affection, and constitutes its anatomical character.*

This inference, as far as the observations of M. Louis extend, is perfectly just, but by no means implies either that the lesion in question is to be considered as the cause of typhoid fever, or that it is actually so considered by M. Louis. It is known that the only other diseases in which the affection of these glands has been observed, in the numerous and minute investigations carried on by M. Louis, are the epidemic cholera and tubercular phthisis, and that he has hence been led to infer that *typhoid fever bears in this respect the same relation to acute diseases that phthisis does to chronic.* I believe however that I am stating the result of the experience of many of those whom I see around me, as well as of my own, when I say that in this country, neither in the one nor in the other of these diseases does the lesion of the glands of Peyer seem to be of equal frequency of occurrence as in many parts of France. With respect to fever indeed the observations of many of our own pathologists are decided: thus we find Dr. Hodgkin, one of the most recent as well as most diligent and competent observers, stating that although the lesion of the aggregate glands has been detected in most of the fatal cases of fever which he has examined, he has seen others

* See *British and Foreign Medical Review*, July, 1841, p. 33.

in which the glands, so far from being deranged, have been barely discernible.*

In this statement Dr. Hodgkin is borne out by the experience of Dr. Southwood Smith, and by the recorded statements of many other authorities. A similar observation has been also made in France by M. Pereyra, who in relating the appearances after death, arising during convalescence from typhoid fever, in which no trace of the glands of Peyer nor of those of Brunner could be detected, states that notwithstanding the close resemblance, both in its symptoms and progress, of the typhoid fever of Bourdeaux to that of Paris, the organic lesions are very different, alteration of the glands being rarely discovered.† An attempt has been made by Dr. Alexander Stewart to explain this and some other differences which exist in the statements of various observers. In an able paper on the subject of fever,‡ he endeavours to establish a distinction between typhus and typhoid fever or dothinenteritis, to the former of which he would refer the fever occasionally so prevalent in Edinburgh and elsewhere, and to the latter all those cases in which the lesion of the glands of Peyer occurs; but after a careful consideration of his statements, as compared with those recorded by others and my own limited observations, I feel myself compelled to come to the conclusion that there is no sufficient reason to consider the two affections as essentially distinct, and consequently

* *Lectures on the Morbid Anatomy of the Serous and Mucous Membranes*, vol. ii., part i., p. 481.

† *Journal de la Societé de Médecine de Bourdeaux* in *Gazette Médicale de Paris*, April 17th, 1841.

‡ *Edinburgh Medical and Surgical Journal*, October, 1840, p. 289.

that the lesion of the glands cannot be received as either the cause or the essential anatomical character of the typhoid disease.

It is admitted by Dr. Stewart that affections of Peyer's glands occur to a slight extent in a proportion of the cases which he would denominate typhus, but the lesion in its more exquisite form has likewise been observed in other varieties of fever. He has himself seen large elliptical patches of ulceration in the jejunum of a female, who died of puerperal fever, with rupture of the uterus and peritonitis—"ulcers," he remarks, "which, had they been found in a patient who had presented the ordinary symptoms of typhoid fever, would certainly have been looked upon as characteristic of the disease."* Dr. Richardson, of New York, reports six cases of remittent fever occurring in the New York Hospital, in which lesion of Peyer's glands was observed, and in three of them the affection had proceeded to ulceration; and also a case of intermittent fever, in which they were distinctly enlarged, and in the lower portion of the ileum very prominent, though not ulcerated.† A similar change has been observed in the remittent fever of Bombay,‡ and the occurrence of pustules and ulcerations "precisely similar to those which are met with in those who have died of typhoid fever and pulmonary consumption," is recorded by Professor Alexander, of Utrecht, as having been seen by him in the intestines of persons who have died of small-pox.§

* *Edinburgh Medical and Surgical Journal*, October, 1840, p. 329.

† *New York Journal of Medicine and Surgery*, January, 1841, p. 87.

‡ *India Journal of Medical and Physical Science*, January, 1840, p. 27.

§ *Gazette Médicale de Paris*, September 26th, 1840;—*Edinburgh Medical and Surgical Journal*, January, 1841, p. 255.

The same discrepancies will be found to attend the appearance of the eruptive affection, from the presence of which it has recently been endeavoured to class typhoid fevers among the exanthemata. With the character of this eruption, from personal experience, Dr. Hodgkin professes himself to be unacquainted; but, on the other hand, it has certainly been recognised as very generally present in the very situations where, until pointed out, it had not been before remarked. Dr. Stewart contends that there is a marked distinction between the eruption attendant upon the typhoid fever and that which accompanies typhus, the former of which is said to be less permanent and more florid than the latter. To enter upon these questions however, so as to give an analysis of the various points in dispute, would require a report for itself, and I am compelled therefore to content myself with a mere indication of the facts referred to.

Notices of the occurrence of typhoid fever, with lesion of the glands of Peyer, in young children and infants, have been given, and cases reported by M. Rufz,* M. Charcellay, of Tours,† MM. Rilliet and Barthez,‡ and M. Eugene Audigann;§ but it may be doubted whether in many of these cases the lesion of the glands, discovered after death, does not constitute the sole evidence of the existence of the fever during life. This would seem also to be the opinion of M. Valleix, no mean authority,

* *Archives Générales de Médecine*, September, 1840.

† *Archives Générales de Médecine*, September, 1840.

‡ *Archives Générales de Médecine*, October, 1840;—*Journal des Connaissances Médico-Chirurgicales*, April, 1841.

§ *Gazette Médicale de Paris*, April 10th and May 1st, 1841.

who states decidedly that, in a case which had been quoted from his work, *Sur les Maladies des Enfans nouveaux nèes,* as an example, typhoid fever was out of the question.*

I cannot conclude these observations without alluding to the very excellent essay by Dr. Davidson, of Glasgow, on the Sources and Mode of Propagation of the continued Fevers of Great Britain and Ireland, to which the Thackeray Prize was awarded at the Southampton Meeting of the Association. Without entering into the difficult questions therein discussed, I may be allowed to congratulate the Association and the liberal founder of the prize, on the amount of interesting and valuable information which has thus been elicited, and perhaps also to express the hope that the course so auspiciously entered upon may be from time to time followed up by the investigation of other points of equal interest requiring elucidation, and the illustration of which would equally contribute to the advancement of our knowledge and the benefit of those for whom we are all desirous to make knowledge available.

Some very judicious remarks on the treatment of continued fever have been made by Dr. Eager, of Manchester,† and a comparison drawn between the effects of emollients, antiphlogistics, and purgatives. The conclusion at which Dr. Eager arrives is, that in the milder forms all kinds of treatment, when not too exciting, have proved more or less successful, and that, as in the more severe forms patients have recovered under the most opposite methods, it is

* *Archives Générales de Médecine,* September, 1840.

† *Provincial Medical and Surgical Journal,* October 24th, 1840.

probable the means adopted have had little influence, and that nature alone acted. It should perhaps be stated that many of Dr. Eager's cases were observed in Paris and the rest in Manchester. In all the fatal cases examined after death, one only excepted, the follicular affection was present.

A singular instance of the communication of intermittent fever from a mother to her child has been recorded by Dr. Brunzlow, of Brandenburgh.* The disease in the mother was at first of the tertian, and subsequently assumed the quartan type; in the infant it showed itself in the quartan type, and was ultimately cured by the sulphate of quinine. In cases of obstinate intermittent, which resisted the quinine, Dr. Hartle has successfully employed piperine;† and Dr. Peysson, of Lyons, has, under like circumstances, found frictions with ointment of tartarized antimony applied in different parts of the body, but not so as to produce pustulation, equally efficacious.‡ The external employment of quinine has been recommended by M. Voisin, of Limoges, for the removal of those engorgements of the spleen which are so frequently found to follow intermittent fevers. His method is simply to apply a mercurial plaster, with which from six to eight scruples of the sulphate of quinine have been incorporated, over the tumours, and to renew this occasionally. The cure is usually accomplished in from two to three months, and the treatment is said to have the further advantage of preventing the reappearance of the fever.§

* *Medicinische Zeitung*, May 24th, 1841.

† *Edinburgh Medical and Surgical Journal*, January, 1841, p. 98.

‡ *Journal de Médecine*, April, 1841.

§ *British and Foreign Medical Review*, January, 1841, p 236.

An essay of considerable practical importance on the Nature and Treatment of Scarlet Fever connected with Cerebral Symptoms has been contributed by Dr. T. F. Cornell.* In the cases to which the observations of the author refer, and which he proposes to term scarlatina encephalica, depletive measures, notwithstanding an apparent imperative demand for them on account of the severity of the head symptoms, seem to have proved fatally injurious, while under a contrary mode of treatment, the exhibition of wine and other stimulants, many of the cases were conducted to a favourable termination.

In connection with another of the eruptive fevers, variola, Dr. Decap, of St. Gaudens, of the Department of the Haute Garonne, has had occasion to notice the occurrence of what he considers to be an epidemic variolous fever without eruption. It was observed in connection with small-pox and what the author terms varicella (modified small-pox?). Two instances are related; one in a family of seven children, of whom six had been vaccinated successfully, and the seventh repeatedly attempted to be vaccinated, but without success; the other in a family of five, in four of whom vaccination had been successfully performed. The unprotected child of each family had small-pox, two children belonging to the first family varicella, the remainder had the fever, but without any appearance of eruption.†

The subject of vaccination, which, on account of its connection with small-pox and the now more

* *New York Journal of Medicine and Surgery*, January, 1841, p. 45.

† *Bulletin Général de Thérapeutique*, March, 1841.

than probable identity of the vaccine with variola, may find its place here, continues to receive much attention in France and elsewhere. Reports by MM. Villeneuve* and De Claubry† have been read before the French Academy of Medicine, which contain additional evidence of the advantages resulting from the practice, and valuable statistical information on several points now under investigation. The conclusions of M. de Claubry are, that in the epidemics of variola which have occurred in the departments, vaccination has incontestably tended to arrest the progress of the disease by converting small-pox into varioloid; that the far greater majority of persons vaccinated for a considerable time remained free from sporadic and even epidemic small-pox, although in close communication with the infected persons; that small-pox was always favourably modified by having recourse to vaccination, even where the eruption had already made some progress; that in every case small-pox after vaccination was much less severe than small-pox after small-pox; and that the alteration of the vaccine after numerous transmissions is denied by the greater number of observers. With respect to re-vaccination it is stated that of six thousand six hundred and fifty-two cases in which the progress was regularly observed, in seven hundred and eighteen the re-vaccination succeeded, in one thousand two hundred and eighty-three the vesicle presented doubtful characters, and in four thousand

* *Bulletin de l' Académie Royale de Médecine,* July, 1840, p. 360;—*Archives Générales de Médecine,* November, 1840.

† *Gazette Médicale de Paris,* May 15th, 1841.

six hundred and fifty-one no effect was produced. Of two hundred and nine children, each presenting a perfectly formed cicatrix, re-vaccinated by Dr. Kirkbride, of Philadelphia, in forty-four, or rather more than one-fifth, a perfectly regular vesicle was produced. The virus employed was eighteen and nineteen removes from the cow, and derived from that forwarded from England by Mr. Estlin and Dr. Carpenter.* It may be observed that re-vaccination with good vaccine lymph has been tried by Dr. Davis of the thirty-ninth Foot, on the Madras station, but always without success.†

The application of mercurial plaster in variola to the face and other parts, with the view of preventing the formation of the pustules, has been successful in many cases treated by M. Chomel and others.‡ A paper on this subject has been read by Dr. J. F. Olliffe before the Medical Society of Paris. The plasters should be applied while the eruption is in the papular stage; the formation of pustules is thereby prevented and the progress of the eruption checked, the formation of cicatrices does not take place, and the disease is stated to be conducted to a safe termination. The action of the mercurial is thought by Dr. Olliffe to be specific.§ Sulphur ointment has been proposed as a substitute for this remedy by Dr. Midaveine, of Ghent, and is stated to have proved equally efficacious.‖

* *American Journal of the Medical Sciences*, January, 1841, p. 109.

† *Madras Quarterly Medical Journal*, July, 1840, p. 292.

‡ *Provincial Medical and Surgical Journal*, October 24th, 1840.

§ *Lancet*, February 6th, 1841.

‖ *Annales de la Société de Médecine de Gand* in *Edinburgh Medical and Surgical Journal*, July, 1841, p. 292.

Diseases of the brain and nervous system.—A well-marked case of that rare form of disease, hypertrophy of the brain, has been reported by Dr. Hennis Green.* To the same author we are indebted for tracing more clearly than has hitherto been done the influence exercised by tubercular deposition over the earlier stages of acute hydrocephalus.† Dr. Green observes that he is not acquainted with any work, either of English or continental authors, on the diseases of children, in which cerebral tubercle is mentioned; and yet, according to his experience, the instances are of by no means unfrequent occurrence; while Dr. Schweningen, of Ratisbon, assigns tubercular degeneration as the most frequent cause of acute hydrocephalus;‡ and a similar observation has been made by M. Rufz.§ Of twenty cases collected by Dr. Schweningen, tubercle was found to occur in all, in one, or more organs of the body, and in seven of these the tubercular deposit was seated in the brain. He infers that infantile hydrocephalus consists in effusion consequent on tubercular degeneration, and that the meningitis which accompanies it presents nothing peculiar, and, though a frequent complication, is not necessarily to be considered as a cause. With these conclusions the observations of Dr. Green agree; and the anomalies, irregularities, and premonitory symptoms of authors in general, thus find an explanation. Instances in which

* *Provincial Medical and Surgical Journal*, October 10th, 1840.

† *Provincial Medical and Surgical Journal*, December 12th, 1840; January 16th, 23rd, and 30th; and May 15th, 1841.

‡ *British and Foreign Medical Review*, July, 1841, p. 229.

§ *Gazette Médicale de Paris*, January 23rd, 1841.

tubercular degeneration in the brain was found are also mentioned by Dr. Mohr, of Wurzberg;* by Dr. Kniesling,† and by Mr. Benjamin Bell.‡ The observations made by Dr. Marshall Hughes§ upon the difficulty of discriminating between certain of these cases and some of the more severe forms of infantile remittent fever are deserving of attention, since it is not improbable that the latter has sometimes been confounded with the former affection, and subjected in consequence to treatment the good effects of which have been probably over-estimated.

The connection of apoplexy with disease of the heart, and especially with hypertrophy of the left ventricle, is shown in some instances recorded by Dr. Mohr, of Wurzburg,‖ by M. Mahat,¶ and by Mr. Benjamin Bell.** The case related by M. Mahat is the more remarkable from having occurred in a young man only twenty-four years of age. Whatever relation this form of organic change in the structure of the heart may have with the cerebral affection, the great frequency of disease of the heart in general, as a concomitant of apoplexy, epilepsy, and other diseases seated in the brain, or in which that organ becomes severely affected, must I think be admitted by all who have enjoyed opportunities of observation sufficiently extensive to enable them to come to a correct decision.

* *Wochenschrift für die gesammte Heilkunde,* August 1st, 1840.

† *Wochenschrift für die gesammte Heilkunde,* February 27th, 1841.

‡ *Edinburgh Medical and Surgical Journal,* April, 1841, p. 463.

§ *Guy's Hospital Reports,* April, 1841.

‖ *Wochenschrift für die gesammte Heilkunde,* July 11th, 1840.

¶ *Archives Générales de Médecine,* January, 1841.

** *Edinburgh Medical and Surgical Journal,* April, 1841, p. 465.

The mischiefs frequently arising from improper depletion in apoplectic and paralytic affections have been pointed out by Mr. Copeman,* who shows that apoplectic and paralytic affections may take place in an extreme degree without organic disease of the brain, and that they often occur from other causes than pressure on the brain. The danger of inducing paralysis by the improper use of the lancet in apoplectic attacks was pointed out long ago by Dr. Fothergill, and some judicious practical remarks have been made on the same subject by Dr. Watson† and by Dr. William Macintyre.‡

Dr. Babington, in some excellent observations on epilepsy, published recently,§ is disposed to consider that this disease depends on a functional rather than on a structural change. In many instances he believes it to admit of cure, and recommends the sulphate of zinc in large doses, sometimes even to the extent of thirty grains and upwards, three times a day, as preferable to the nitrate of silver, preparations of iron, or other tonics. The powers of digitalis in the idiopathic and uncomplicated forms of epilepsy have been much extolled by Dr. Sharkey,‖ and the remedy evidently deserves a cautious trial of its effects. Amelioration from the use of belladonna in large doses seems to have been experienced in severe cases of this disease, treated by M. Leuret, at the

* *London Medical Gazette*, December 25th, 1840.

† *London Medical Gazette*, April 16th, 1841.

‡ *Lancet*, May 8th, 1841.

§ *Guy's Hospital Reports*, April, 1841, p. 1.

‖ *An Enquiry into the Efficacy of Digitalis in the Treatment of Idiopathic Epilepsy*, by Edmund Sharkey, M.D., &c., 1840.

Bicêtre.* The action of the remedy was exerted rather in diminishing the frequency of the paroxysms than in lessening their intensity, and its immediate effects were an excitement both of the circulatory and nervous systems, which in the class of patients among whom the disease occurred may possibly have been habitually depressed. Dr. Macdonald, of New York, mentions an instance of periodical epilepsy,† in which the disease yielded to Fowler's solution after other remedies had failed. This case however may possibly have had a malarious origin, and been of the nature of certain forms of intermittent, in which the paroxysms have been observed to assume a convulsive type. Compression of the carotid arteries in epilepsy and other convulsive affections has been successfully employed by M. Stroehlin.‡

The occurrence of cerebral disturbance in connection with disease of the pericardium is alluded to by Dr. Yonge, of Plymouth,§ and he relates an instance which tends to confirm the views of Dr. Bright, "that the more frequent cause of chorea, in conjunction with rheumatism, is the inflammation of the pericardium, and that the irritation is communicated thence probably to the spine, just as the irritation from other parts." The case is important in a practical point, as the remedies usually found effectual in chorea, uncomplicated with pericardiac affection, were unavailing.

* *L'Experience*, September 17th, 1840.

† *New York Journal of Medicine and Surgery*, January, 1841, p. 213.

‡ *Archives Générales de Médecine*, March, 1841.

§ *Guy's Hospital Reports*, October, 1841, p. 276.

Contributions to the pathology of the spinal marrow have been made by M. Prus, Physician to the Salpêtrière,* by Mr. Stanley,† Dr. Hennis Green,‡ and others. The discrepancies of the remarkable case, related by Mr. Stanley, with the doctrines of Sir Charles Bell are such as to show that much careful investigation and accumulated observation are yet required, before we shall be able to explain the difficulties connected with the reception of some of the best established theories of our science.

It is impossible to give even a bare outline of the interesting facts which are to be found in the numerous periodicals, in connection with the investigations now carrying on into the physiology and pathology of the nervous system. I am compelled therefore to pass over several instructive examples of disease of the trigeminus and other nerves reported by Dr. Budge, of Altenkirchen,§ M. Vogt, of Neufchatel,‖ M. C. James,¶ and other labourers in this field.

Dr. Marshall Hall, in pursuing his investigations into the physiology of the nervous system, has applied the doctrine of reflex actions to the elucidation of many points connected with disease of the nervous centres, concerning which we were either

* *Revue Médicale*, December, 1840 ;—see also *Revue Médicale*, March, 1841.

† *Medico-Chirurgical Transactions*, vol. xxiii.

‡ *Provincial Medical and Surgical Journal*, March 6th, 1841.

§ *Wochenschrift für die gesammte Heilkunde*, October 3rd and 10th, 1840, and *British and Foreign Medical Review*, January, 1841, p. 230.

‖ *L'Experience*, October 22nd, 1840.

¶ *Bulletin de l' Academie Royale de Médecine*, November 30th, 1840 ;—*Edinburgh Medical and Surgical Journal*, April, 1841, p. 551.

in doubt, or had adopted erroneous views. This application of the physiological discoveries of Dr. Hall to the phenomena of diseased action is likely to prove fruitful in valuable results; and the light thereby thrown upon the progress of disease, and the effects of remedies, is calculated to exercise material influence in regulating the treatment of many affections of the brain and nervous system, concerning which we have hitherto been much in the dark.

The extreme suffering which arises from the different forms of neuralgia, and the unyielding nature of many cases of this severe disease, lead to the trial of every remedial agent from which the slightest hopes of relief may be anticipated. M. Levrat has succeeded in curing several obstinate cases, by administering opium in such doses as to produce narcotism.* M. Majendie recommends the passing of an electric current along the course of the affected nerve; and instances of the beneficial effects of this mode of treatment are given by M. C. James.† The internal use of croton oil has proved advantageous in this and some other affections of the nervous system in the hands of Dr. Newbigging, of Edinburgh.‡ Its external application as a rubefacient and irritant in sciatica is highly spoken of by Dr. Slonetzki Michailoffski, a Russian physician.§ The good effects of hydriodate of potash in sciatica and lumbago have been experienced by Dr. Graves

* *Gazette Médicale de Paris*, June 12th, 1841.

† *Gazette Médicale de Paris*, October 24th and Nov. 7th, 1840.

‡ *Edinburgh Medical and Surgical Journal*, January, 1841, p. 100.

§ *London Medical Gazette*, July, 1840.

in his own person after the failure of other remedies; and from subsequent experience, he is enabled strongly to recommend the employment of this remedy, both in subacute and chronic lumbago and sciatica.* Strychnine is another remedial agent which has been had recourse to in these severe and troublesome affections; and Mr. J. Pidduck brings forward examples of its successful employment in neuralgia of the infra-orbital branch of the fifth pair, in sciatica, in severe neuralgia of the left arm accompanied with cerebral symptoms, and in neuralgia complicated with loss of power in the right hand and arm.†

Cases of hydrophobia, with the appearances on dissection, have been recorded by Dr. Foville‡ and by Dr. Pettigrew.§ M. Breschet also has read a paper before the Academie des Sciences‖ to prove, what in this country no one would be inclined to doubt, the contagious nature of the disease. The French writers, it should be observed, draw a distinction between rabies canina, transmissible by inoculation of the saliva only, and hydrophobia, by which they understand a purely nervous disorder of spontaneous origin, neither necessarily fatal nor capable of being communicated. Two fatal cases of this latter disease are related by M. E. Vautier,¶ and another is recorded by Dr. Von Freyden, of

* *Dublin Journal of Medical Science*, November, 1840;—*Medico-Chirurgical Review*, April, 1841, p. 577.

† *London Medical Gazette*, August, 1840.

‡ *Bulletin de l'Academie Royale de Médecine*, February, 1841, p. 428.

§ *Provincial Medical and Surgical Journal*, December 19th, 1840.

‖ *Provincial Medical and Surgical Journal*, October 17th, 1840.

¶ *Gazette Médicale de Paris*, January 9th, 1841.

Königsberg.* Their truly spontaneous origin however may admit of doubt; certainly there would seem to be but slight grounds for drawing a distinction between these cases and those of genuine rabies, either from the symptoms as far as they are narrated, or from the appearances on dissection.

In connection with this subject it may be observed that Dr. Lewis, of Liverpool, has administered the extract of Indian hemp in a case of tetanus with very considerable effect in controlling the spasm. The patient fell asleep, and he subsequently became able to open his mouth and converse. He ultimately died however, apparently from the effects of the exhaustion, induced by the long continuance and severity of the spasms.†

Diseases of the organs of circulation.—In noticing the accessions made to our knowledge of the diseases of the organs of circulation, attention is naturally directed in the first instance to the centre of the vascular system and its serous covering. Much discussion has taken place at various times on the occurrence of whitish spots and patches of greater or less extent on the surface of the heart. The circumstances under which these spots occur have been investigated by Mr. Paget, who has noticed that with the spots some adhesion, by organized lymph, of adjacent parts of the pericardial membrane is almost constantly found. These adhesions consist generally of slender threads, passing across the furrow between the aorta and vena cava superior

* *Wochenschrift für die gesammte Heilkunde*, August 8th, 1840.

† *London Medical Gazette*, December 11th, 1840.

or between the aorta and pulmonary artery; or there may be small pearly granules on the surface of these vessels and corresponding surface of the pericardium, the remains of adhesions which had once existed. Of forty cases in which these white spots were observed on the heart there were adhesions or their remains in thirty-five. In four cases Mr. Paget found a band of adhesion passing from the surface of the spot to the opposite surface of the pericardium, and Dr. Budd has twice noticed a similar occurrence. In many instances also we are told that a distinct roughness or puckering may be observed on the surface of the pericardium opposite the spots. From these considerations Mr. Paget is induced to regard the opinion before entertained by some pathologists, that these spots are the result of inflammation, as correct; and deduces also, from the frequency of their occurrence, the further conclusion that pericarditis is an affection far more common than has hitherto been supposed.*

Every observation which can contribute to the diagnosis of affections of the pericardium becomes of importance, both on account of the obscurity in which the diseases of this part are often involved and their severe and dangerous character. Mr. John Mackenzie has pointed out† that in cases where hydrops pericardii is combined with co-existing effusion into the pleura, the patients are unable to bear the horizontal position, but that where the fluid is confined to the pericardium the horizontal position is preferred, probably from the weight being thus taken from off the diaphragm.

* *Medico-Chirurgical Transactions*, vol. xxiii.

† *Lancet*, April 17th, 1841.

Several instances of effusion into both the pleural and pericardial cavities were observed by Dr. Karawajew, of Cronstadt, during an epidemic scurvy which prevailed among the sailors of that town. The disease resisting all other means, Dr. Karawajew performed the operation of paracentesis in several of the patients, in two of whom the pericardium was tapped. One of these recovered, and was the only man whose life was saved after effusion into the pericardium had clearly taken place.*

I have not been able to ascertain that much has been recently added to our knowledge of the pathology of the heart itself. A paper by Dr. Blakiston, of Birmingham, was read before the Royal Medical and Chirurgical Society on patency of the tricuspid valve as a frequent cause of dropsy, which, as Dr. Copland remarked in the discussion which took place, afforded fresh illustration of the principle, now recognised by all recent writers on the subject, that obstruction on the right side of the heart, however caused, generally produces dropsy; and that in like manner obstruction on the left is attended by hœmoptysis or pulmonary apoplexy.† This view is further supported by the results of experiments performed by M. Jobert de Lamballe on the effects of ligature of the common carotid arteries. These were uniformly disturbance of the pulmonary organs during life, and congestion of the lungs, on inspection, after death; but in no instance was there noticed any lesion of the cerebral functions, or disorganization discovered in the structure of the brain.‡

* *Medicinische Zeitung*, December 23rd, 1840.

† *Provincial Medical and Surgical Journal*, January 23rd, 1841.

‡ *Gazette Médicale de Paris*, August 15th, 1840;—*Edinburgh Medical and Surgical Journal*, April, 1841, p. 513.

Some judicious observations on functional derangement of the heart have been published by Dr. Corrigan,* in which attention is drawn to several points of practical importance connected with the employment of auscultation in such cases. Among those most liable to mislead the hasty or incautious observer is the palpitation which so frequently occurs in young females. This nervous palpitation often simulates patency of the aorta. Dr. Corrigan points out as diagnostic marks that in the permanent patency of the aorta "*the bruit in the carotid is synchronous with the diastole of the arteries;*" whereas in the hysteric or chlorotic affection "*it is not confined to the duration of the diastole of the artery, and is very frequently a continuous, uninterrupted, long, rumbling sound.*" It will be better however to look upon all such cases with suspicion, and closely scrutinize them in every possible way, before taking up with the opinion that organic degeneration is actually present.

Dr. Kingston reports a case in which the following singular lesions of the vascular system were observed: close adhesion of one of the aortic valves throughout its whole extent to the surface of the aorta, and occlusion of the orifice of the left coronary artery, which was seated in front of the adherent valve, by means of a false membrane connected with the valve. Among the stethoscopic signs was a strong blowing murmur at the region of the semilunar valves, owing to the regurgitation through the aortic orifice, one-third of which was permanently patent.† A case of spontaneous rupture of the right

* *Dublin Journal of Medical Science*, March, 1841.

† *London Medical Gazette*, August, 1840.

auricle of the heart, with effusion of blood into the pericardium, life continuing for about ten hours after the occurrence, is related by Dr. Stroud;* and Theophilus Thompson mentions an instance of Dr. aneurism of the aorta supposed to have burst into the pericardium several weeks before death, on which account it presents features of considerable interest in reference to diagnosis, and to some questions connected with medical jusisprudence.†

A valuable paper on varicose aneurism of the aorta has been contributed by Mr. Thurnham.‡ From the history of twelve cases, three of which were seated in the descending aorta, one in the arch, and the remaining eight in the ascending aorta or its sinuses, communicating respectively with the superior vena cava, right auricle, right ventricle, and pulmonary artery, certain diagnostic marks are deduced, the more important of which are severe and rapidly advancing anasarca of such portions of the body as are below the varicose orifice, livor of the face, dyspnœa, often amounting to orthopnœa, cough, with expectoration, especially if the sputa be bloody, and a remarkable jerking, and in some cases very feeble pulse. The physical signs are a superficial, harsh, and peculiarly intense sawing or blowing sound, accompanied by an equally marked purring tremor, heard over the varicose orifice, and in the current of the circulation beyond it; this sound is continuous, but is loudest during the systole, less loud during the diastole, and still less so during the interval. A case of aortal aneurism

* *London Medical Gazette*, September, 1840.

† *London Medical Gazette*, September, 1840.

‡ *Medico-Chirurgical Transactions*, vol. xxiii.

which opened into the vena cava superior, opposite the entrance of the vena azygos, has also been read by Dr. William Young before the Medico-Chirurgical Society of Edinburgh.*

The tracing of the pathology of the arterial system further comes more within the province of the surgeon, but I must not omit to refer to an instance of aneurism of the pulmonary artery, communicated by Mr. Fearn, of Derby, in which, on examination, after fatal hæmoptysis, "a distinctly defined *aneurismal sac*, as large as a nutmeg," was observed jutting into a tuberculous excavation on the upper lobe of the left lung. "The parietes of the sac were thin, and it did not contain any fibrinous layers; a vessel, the size of a small crow-quill, leading from a considerable trunk of the pulmonary artery, was distinctly traceable into the sac."†

This would seem to be the place to refer to Professor Guy's observations on the diurnal variations of the pulse in disease,‡ which I am induced to do simply with the view of recording the progress of the investigation, rather than of drawing attention to any of the results hitherto attained, as the observations are not yet in sufficient number to allow of any practical inferences being deduced.

Diseases of the organs of respiration.—The contributions to the pathology of the pulmonary organs have been neither numerous nor characterized by their importance. The occurrence of an epidemic

* *Edinburgh Medical and Surgical Journal*, January, 1841, p. 63.

† *Lancet*, February 6th, 1841.

‡ *Edinburgh Medical and Surgical Journal*, January, 1841, p. 90.

pleuritic effusion in connection with and as a termination of scurvy has been already alluded to; and, with the exception perhaps of some observations of M. Cazenave on the pneumonia of aged people,* I find little to require attention among the inflammatory states of the lungs. M. Cazenave points out certain peculiarities in this form of inflamed lung as occurring in old people which it is well to bear in mind, among which are the clear sound on percussion, and the absence of the crepitating rale, cough, expectoration, and dyspnœa. The observations of M. Fauvel on capillary bronchitis† contain little which is not already well known in this country.

Some cases of gangrene of the lung are narrated by Dr. Craigie,‡ and are valuable from their fullness of detail and the remarks by which they are accompanied, but throw little additional light on the causes of this condition. Certain forms of this affection have been attributed by Mr. Ferrall to the disorganization of blood, extravasated into the tissue of the lung;§ but Dr. Craigie, who had at one time been of a contrary opinion, is now disposed, with Dr. Bright, M. Andral, and more lately M. Cruveilhier, to look upon this lesion as of inflammatory origin. The cases described by Dr. Craigie are illustrations of two forms of gangrene, the one defined; the other circumscribed. To these he adds some notes of a third form in which the gangrene occurred, scattered in patches of no great

* *Gazette Médicale de Paris*, January 9th, 1841.

† *Archives Générales de Médecine*, March, 1841.

‡ *Edinburgh Medical and Surgical Journal*, July, 1841, p. 1.

§ *Dublin Journal of Medical Science*, March, 1841.

extent throughout the pulmonary tissue. A conjecture is hazarded as to whether the gangrenous state may not be connected with mercurial impregnation of the system. The suggestion is worthy of investigation; but I may remark that in a case which I had myself the opportunity of witnessing some years back there was no reason to suppose that mercury had been taken; and, considering the free use of mercury, even to salivation, resorted to by many practitioners in cases of pneumonia, it would seem that, were this idea correct, gangrene of the lungs should be more frequently witnessed than it appears now to be.

The laws which regulate the deposition of tubercles have been made the subject of observation by Dr. G. H. Barlow,* who attempts to establish the position "that any organ is most liable to become the seat of tuberculous deposit when its vascular and functional activity bears the greatest ratio to that of the other organs of the body." In illustration of this law Dr. Barlow remarks that in childhood, youth, and early manhood, the circulation is most active in those organs which are ordinarily the seat of tuberculous deposit, and are also severally at one or other of these periods at their maximum of relative functional activity. Thus in early childhood the head is largely developed in proportion to the rest of the body, at which period tubercular disease is found chiefly to affect the brain. In more advanced childhood, during the active period of nutrition, tubercles are found more especially in the mesenteric glands and abdominal viscera; and it is not until the period of youth or full growth that

* *Guy's Hospital Reports*, April, 1841, p. 209.

the lungs acquire their full liability to the deposition of tubercles. A concise review of the opinions advanced on the development and growth of tubercles in pulmonary phthisis has been drawn up by M. Valleix,* in which the author is inclined to adopt the views put forth by Dr. Carswell and M. Guillot respecting the deposition of tubercles on the surface of the mucous membrane, and contends that this morbid change is not to be considered as a result of inflammation. There are however no additional facts brought forward, neither in this paper nor in another which follows it† on the curability of phthisis, to support the opinions taken up by the author on either subject.

A plan of treatment of tubercular phthisis in its early stages, founded on the views of Dr. Carswell, has been recommended by Dr. Marshall Hughes,‡ consisting chiefly of the repeated use of emetics, conjoined with counter irritants, iodine, and tonics. The treatment by emetics was proposed some years ago by an Italian physician, and its beneficial effects highly extolled, though I am not aware that the same desirable results have been obtained by any other practitioner. The employment of salt has likewise been of late highly recommended as efficacious in phthisis pulmonalis, and Dr. Amadée Latour relates instances of the beneficial effects of this remedy,§ conjoined with nourishing diet, in one of which auscultation had

* *Archives Générales de Médecine*, February, 1841.

† *Archives Générales de Médecine*, March, 1841.

‡ *Guy's Hospital Reports*, October, 1840;—*Braithwaite's Retrospect*, 1840, p. 201.

§ *Lancet*, July, 1840;—*Provincial Medical and Surgical Journal*, July 3rd, 1841.

previously detected cavernous rale, with absence of the respiratory murmur at the summit of the right lung, and pectoriloquy and absence of the respiratory sound on the left side, except at the lower part, where it was mixed with some crepitant rattle. Three forms of pulmonary consumption are distinguished,—the scrofulous, the inflammatory, and the nervous; the first of which is best adapted for the employment of the method of treatment recommended by Dr. Latour. Some judicious regulations are laid down for the general management of phthisical patients, but do not differ from those which are usually followed in this country. With respect to the specific remedial measure, I am afraid that it will not prove more efficacious than many others which from time to time come forth with equally strong recommendations. In the treatment of consumptive cases the practical physician is ever anxious to avail himself of any thing which will afford a chance of recovery; and there are few of these measures which I have not myself given a trial to. I never do so without returning to the conviction that it is only by attention to general principles, modified by the circumstances of each individual case, that we can hope to be of any benefit to the subject of tubercular disease. From the assiduous application of such principles I have often seen considerable benefit; sometimes, in the incipient stages, and when the tubercular constitution has not been strongly marked, and the tubercular deposition has appeared to be of limited extent, I believe I may say permanent restoration to health.

But if the cure is not in our power, much alleviation of suffering may frequently be obtained, and relief assured in many of the distressing symptoms which harrass the feelings and disturb the serenity of the closing days of the phthisical patient. The external application of very hot water to the throat, in the pricking and smarting occasionally experienced in that part, has with such views been recommended by Dr. Hughes.* He has seen this measure followed by speedy relief, as often as it was had recourse to. He mentions also having controlled a harrassing diarrhœa in the same patient by the application of three or four leeches to the anus, after the usual treatment by chalk astringents and sedatives had proved unavailing. Great relief from this troublesome sympton, which is so peculiarly harrassing to the patient, may be often obtained, not only in the later stages of consumption, but in the chronic diarrhœa attendant upon ulceration of the mucous membrane of the intestines, and frequently accompanying other disorders, from the exhibition of ipecacuanha. The excessive perspiration attendant upon phthisis has been relieved by the employment of tannin, in doses of from a third of a grain to a grain, given in the evening, with or without opium.† Alleviation of the symptoms generally is said to have been obtained from the use of the protioduret of iron. This remedy is strongly recommended by M. Dupasquier, of Lyons, not as a specific, but as a medicinal agent, infinitely more useful than any

* *London Medical Gazette*, July, 1840.

† *Journal des Connaissances Médicales*, December, 1840.

other which has hitherto been employed.* Other remedies which have been recently recommended are frictions with the animal oil of dippel by Dr. J. B. Riche, of Obernay,† the inhalation of arsenical vapours by M. Troussean,‡ and ergot internally as a counter-stimulant by Dr. Luigi Parola,§ and an ingenious method of introducing iodine into the system has been practised by Dr. Alexander Leigh, of Jersey, who directs the patient to apply a sufficient quantity of iodine ointment under both axillæ, and to cover the head with the bed-clothes, and in this manner to inhale the iodine volatilized by the heat of the axillæ ‖

In a paper read before the Royal Medico-Chirurgical Society of London, by Dr. George Budd,¶ it has been attempted to show that want of elasticity in the lung—in other words, absence of its natural tendency to collapse,—is the cause of many of the anatomical characters of emphysema, and of most of the symptoms by which this affection is recognized. Among the effects of this condition are the permanent elevation of the ribs and roundness of the chest; the consequent immobility of the chest and abdominal character of the respiration; the short and uninterrupted cough proving ineffectual for the complete dislodgement of the bronchial secretion, and there-

* *Journal de Médecine*, May, 1841;—*Provincial Medical and Surgical Journal*, June 12th, 1841.

† *Revue Médicale*, December, 1841.

‡ *Bulletin de Thérapeutique*, February, 1841;—*Journal de Médecine*, February, 1841.

§ *Revue Médicale*, March, 1841.

‖ *London Medical Gazette*, May 28th, 1841.

¶ *Medico-Chirurgical Transactions*, vol. xxiii.

fore coming on in oft-repeated paroxysms; the increase of dyspnœa from this cause. From want of elasticity of the emphysematous portions of the lungs it also arises, not only that the air is not expelled from them, but that it makes but little sound in entering them; hence we have the clear sound on percussion and feebleness of the respiratory murmur. Less blood also circulates in the pulmonary tissue, which is found dry and pale, although the mucous membrane of the bronchial tubes may be at the same time deeply congested. The dilatation of the air-cells themselves is likewise ascribed by Dr. Budd to the want of elasticity of the lung. "The powerful muscles of inspiration," he observes, are continually acting to dilate the chest, and thence, by virtue of atmospheric pressure, the air-cells. This agency is not counteracted, as it should be, by the natural elasticity of the lung; and the air-cells, as well as the cavity of the chest, are in consequence permanently dilated.

A case of that singular and obscure disease laryngismus stridulus, or thymic asthma, which presents some features of interest, has been read before the New York Medical and Surgical Society by Dr. Swett.* The progress of the affection, which occurred in a child of nineteen months old, was similar to that of other recorded cases, with the exception that the child died with symptoms of inflammatory excitement. On examination, the thymus gland was found to be much hypertrophied, with marks of irremediable inflammation in the bronchial tubes. Two other children of the family died with the same

* *New York Journal of Medicine and Surgery*, October, 1840, p. 450.

disease. A similar instance of thymic asthma, affecting a whole family, has recently been published in this country.* In one of the cases here referred to, in which an examination took place, the thymus gland was also found inordinately enlarged. It may be mentioned that Dr. John Waters has found the oxyde of zinc of great service in a case of this formidable affection.†

The operation of tracheotomy, usually considered as not likely to prove serviceable in croup, has been had recourse to in that disease by M. Saussier‡ and by M. Maslieurat Lagemard,§ and on two occasions was mainly instrumental in the recovery of the patient.

The subjects of auscultation and percussion are so intimately connected with diseases of the thoracic viscera that the few additional observations to be made upon them will find an appropriate place here. Several special researches have been entered into on this subject which require notice, although no improvements of consequence have been made, the researches of Dr. Skoda, of Vienna,‖ belonging to a period prior to that embraced in this retrospect. M. Beau has brought forward several observations in support of his views of what may be termed the resonance of the respiration through the chest, to which he attributes the respiratory murmur and other sounds generated in the air passages.¶ The

* *Lancet*, April 17th, 1841.

† *Provincial Medical and Surgical Journal*, May 15th, 1841.

‡ *L'Experience*, December 3rd, 1840.

§ *Gazette Médicale de Paris*, June 12th, 1841.

‖ See *Edinburgh Medical and Surgical Journal*, July, 1841, pp. 88 and 272.

¶ *Archives Générales de Médecine*, August, October, and December, 1840.

objection urged by Dr. Corrigan, of Dublin*, that the respiratory murmur, were these views correct, should be heard equally in expiration as in inspiration, appears to be conclusive against them. I have already had occasion to allude to a practical caution, derived from the same high authority, against erroneous inferences which might be drawn, from the incautious employment of the stethoscope, from certain sounds afforded by the heart in nervous affections. Similar caution is given by Dr. Graves with respect to the bronchial rales, which may be detected by auscultation in cases of asthma,† in which, with distinct proofs of the absence of inflammation, we may have a *maximum* of bronchial rales; and again, in the space of a few hours, not a single sound at the very points where so many were audible before. The practical inference drawn by this intelligent physician is, "that we should study such rales with great attention, and in connection with other signs and symptoms, lest we be induced to treat antiphlogistically a case in which depletion might be uncalled for or injurious, an error by no means unfrequent among those who rely too exclusively on physical signs." Some good remarks upon the construction and employment of the stethoscope, with illustrations of the theory of its use, have been made by Professor Landouzy, of Rheims.‡ His new method of applying it for the purposes of clinical instruction, by which many individuals are enabled to listen to its indications at the same time, appears to be more

* *London Medical Gazette*, March 12th, 1841.

† *Dublin Journal of Medical Science*, November, 1840;—*British and Foreign Medical Review*, January, 1841, p. 265.

‡ *Gazette Médicale de Paris*, May 15th, 1841.

ingenious than useful. M. Raciborski also has written on the subject of auscultation;* but there is some reason to fear that the excessive refinements attempted to be introduced will tend rather to confuse than to elucidate the indications to be derived from the instrument. I must not however quit the subject of auscultation without referring to an ingenious memoir on percussion by Drs. Cammann and A. Clarke, of New York,† and to the application of the plessimeter by M. Piorry to the examination of the condition of the arch of the aorta, and the ascending portion of that vessel.‡

Diseases of the digestive organs.—Some excellent remarks upon dyspepsia, as connected with the mind, have been published by Dr. Austin Flint, of Buffalo, in the United States.§ It is shown that very many of these cases are not always the effect of undue indulgence in food or drink, but rather owing to the operation of mental causes. The remark has been made by Celsus, "*At imbecillis (quo in numero magna pars urbanorum omnesque pæne cupidi literarum sunt) observatio major necessaria est; ut quod vel corporis, vel loci, vel studii ratio detrahit, cura restituat;*" and the effect of excessive or ill-regulated employment of the powers of the mind in disordering the functions, not of the digestive organs only, but also those of the whole system, is in these days sufficiently appreciated.

* *L'Experience*, October 29th, November 5th, 12th, and 19th, 1840.

† *New York Journal of Medicine and Surgery*, July, 1840, p. 62.

‡ *Archives Générales de Médecine*, December, 1840.

§ *American Journal of the Medical Sciences*, January, 1841, p. 64.

It is deficiency of intellectual exertion, as a cause of the diseased condition, which seems to have escaped observation. 'Mind tends to action;' or, to quote the expression of another philosopher, exercise or action is a 'want' of the intellect. "This tendency or want," observes Dr. Flint, "will exist in proportion to the extent of the mind's capacity for exertion; and, like all the intuitive impulses and demands implanted in the human constitution, it must be fulfilled and gratified, or the economy will suffer." The ordinary medicinal agents in such instances fail of effect, and the treatment can only be successfully conducted by operating upon and through the medium of the mind.

In inflamed conditions of the mucous membrane the employment of oxalic acid has been recommended by Dr. Nardo. He has chiefly used this remedy in inflamed mouth and fauces, in the aphthæ of children, and in gastritis and gastro-enteritis, and has found it to possess the property of instantly calming the severe pain which frequently accompanies affections of this nature.* The use of alum in inflamed fauces is highly praised by M. Velpeau, who prefers, when practicable, that it should be applied in substance, the powder being rubbed over the inflamed parts with the finger.†

MM. Malespina and Briquet have reported some cases of inflammation and abscess of the appendix vermiformis of the cœcum.‡ From these cases and some others to which reference is made in the same

* *Provincial Medical and Surgical Journal*, June 26th, 1841.

†‡ *Provincial Medical and Surgical Journal*, May 22nd, 1841.

‡ *Archives Générales de Médecine*, January, 1841;—*Edinburgh Monthly Journal of Medical Science*, April, 1841.

memoir, it would seem that the symptoms and progress are very similar to what is observed in affections of the cœcum and lower part of the ileum: in the course of the disease a painful tumour becomes developed in the right iliac fossa, in which fluctuation is often perceptible. Some cases of iliac abscess, related by Dr. Charlton, of Newcastle-upon-Tyne,* and a case of chronic hypogastric abscess by Mr. James Miller, of Edinburgh,† may be referred to in connection with this affection.

In a case of constipation, threatening to terminate in inflammation, in which a variety of powerful remedies had failed of effect, Mr. Whitehead, of Manchester, applied ice-cold water by means of a large roller towel, properly folded, to the exposed abdomen. The effect was almost immediate, the tension of the belly becoming greatly reduced in the space of four or five minutes, and a copious evacuation of dry hard fæces quickly following.‡ The practice is analogous to that of dashing cold water on the abdomen, which is so frequently had recourse to in like cases. This latter remedy has been employed by Mr. Mosgrove in a case of lead colic, in which epilepsy threatened after cathartics, and opiates had been used without success.§ It may here be remarked, that the regular employment of sulphur would seem to exercise considerable influence in preventing the bad effects of lead on the system.‖

* *Edinburgh Monthly Journal of Medical Science*, May, 1841.

† *Edinburgh Monthly Journal of Medical Science*, May, 1841.

‡ *London Medical Gazette*, October 2nd, 1840.

§ *Lancet*, August, 1840.

‖ *Journal de Chimie Médicale*, January, 1841.

Diseases of the urinary organs.—The statement of Dr. Macgregor, that urea is not always defective in diabetes, and that it is occasionally even in excess, has been confirmed by Professor Christison.* An examination after death of a case in which the urine became completely altered before death, presenting the characters of that which accompanies the granulated kidneys, showed a considerable quantity of yellow deposit in the cortical texture of these organs.

An ingenious and simple apparatus has been devised by M. Biot for detecting the presence of sugar in diabetic urine upon optical principles. The method consists in ascertaining the action of the fluid suspected to contain sugar on polarized light, and we are assured that in this manner the smallest quantity of sugar may be instantly detected in the urine of a diabetic patient, and the progress of the disease and the effect of treatment thus ascertained with the utmost facility.† The same principle may be applied also to the detection of albumen, the action on the polarized ray being in this case in a contrary direction, and M. Donné proposes also to determine by the instrument of M. Biot the presence of animal matters, not albuminous, in the urine from the negative results afforded.‡

The treatment of diabetes with ammonia, recently adopted by Dr. G. H. Barlow,§ seems to have

* *Edinburgh Monthly Journal of Medical Science*, April, 1841.

† *Revue Médicale*, January, 1841;—*Gazette Médicale de Paris*, January 9th, 1841;—*Provincial Medical and Surgical Journal*, January 16th and 23rd, 1841.

‡ *Gazette Médicale de Paris*, February 20th, 1841.

§ *Guy's Hospital Reports*, October, 1840, p. 182.

afforded considerable relief, and the remedy is worthy of further trial in this intractable disease, although the physiological grounds on which Dr. Barlow is induced to recommend it, as a highly azotized substance, are rather questionable. Mr. Clay, of Manchester, gives a very favourable report of the tincture of sesqui-chloride of iron in the saccharine form of this affection.* The first case mentioned is that of a man aged seventy-five, who had laboured under the disease for two years. At the end of six weeks he was perfectly cured, and has had no return of his complaint. The second case was cured in twenty-four days. The third, a woman aged fifty-six, with general health impaired, and diabetes of eight months' standing, was cured in eight weeks. It is proper to mention that the steel was given in conjunction with opium and quinine.

Albuminuria would seem to be an affection of very irregular occurrence, extremely prevalent as an accompaniment of dropsy in some situations, and scarcely known in others In an epidemic of scarlet fever which prevailed at Berlin in the early part of the year 1840, Dr. Philipp found that, as in the London epidemic, dropsy invariably showed itself after the decline of the eruption. In no instance however did the dropsy prove fatal; and albumen was rarely detected in the urine, and only by nitric acid, never by heat alone. In both these respects the disease differed from the London epidemic; and Dr. Philipp suggests that this difference may be owing to the rarity of albu-

* *Lancet*, October 10th, 1840.

minous urine in dropsy as it occurs in Berlin. During a period of two years, in which Dr. Philipp has been attached to one of the districts in that city, where the number of admissions has averaged one hundred and fifty in a month, he has only seen two cases of Bright's disease.* Though in the habit of testing the urine in all cases of dropsy, and frequently also in other diseases, I have rarely succeeded in detecting the presence of albumen, and have been induced therefore to infer that in some of the midland districts of this country the disease is of rare occurrence.

In connection with this subject I may here refer to the experiments of Dr. G. O. Rees on the detection of albumen in urine. He has shown that coagulation is induced by nitric acid in the urine of patients taking copaiba,† although no albumen was present, and more recently that a similar result occurs where cubebs has been administered.‡ The precipitate thus afforded by cubebs and copaiba is described to be of that cloudy opaque character which simulates albumen, and occurs immediately on the addition of the test. As a mode of distinguishing these precipitates from that caused by the presence of albumen, Dr. Rees recommends the employment of the ferro-cyanide of potassium as a precipitant, the urine being previously acidulated by acetic acid. If albumen be present, it is immediately thrown down. A similar result is obtained by allowing the urine, to which nitric acid has been added, to remain at rest an hour or two.

* *Wochenschrift für die gesammte Heilkunde*, August 29th, 1840.

† *London Medical Gazette*, December 11th, 1840.

‡ *Guy's Hospital Reports*, April, 1841, p. 121.

If the precipitate consists of albumen it will be found to collect at the bottom of the tube, or to be arranged in flocculi throughout the liquid; if, on the other hand, it is caused by copaiba or cubebs, it does not subside for several days.

I may mention that a case of albuminous nephritis, attended with œdema, is related by M. Prus,* in which, after the application of leeches to the region of the kidney, the œdema and albuminous state of the urine were removed by the employment of the alkaline waters of Vichy.

The urine has been examined in pregnancy and in various states of disease by M. Donné, who has been able to determine, from the microscopic character of the salts deposited, with great probability, if not with absolute certainty, the existence of pregnancy. The urine in chlorosis he found to be destitute of all traces of iron, although in health a certain quantity is always present; and in phthisis also the urine presents some peculiar qualities which are considered by M. Donné so characteristic as to afford a means of diagnosis in doubtful cases.†

The singular effect of benzoic acid or of a soluble benzoate, when taken internally, in changing the comparatively insoluble lithates of the urinary secretion into soluble hippurates, pointed out by Dr. Ure, should perhaps be noticed here. The application of this principle in the treatment of unhealthy states of the urine, connected with a calculous or gouty diathesis, is at once apparent. Dr. Ure recommends that in such cases the benzoic acid should

* *Revue Médicale*, March, 1841.

† *Provincial Medical and Surgical Journal*, June 19th, 1841.

be administered, in doses of twenty grains, one hour after a meal, in conjunction with the phosphate or biborate of soda, by which it is rendered more soluble without any abatement of its specific power.*

Diseases of the uterine system.—Dr. T. H. Shute has called attention to the presence of the continuous whirring sound, termed by M. Bouillaud *bruit de diable,* in chlorotic patients. It may be heard on applying the stethoscope over the course of the carotids, and is thought by Dr. Shute to afford a means of diagnosis in doubtful cases of chlorosis. The slighter form of this whirring, in which the sound is weaker, is said very closely to resemble that produced by holding a conch-shell to the ear, and is proposed to be designated "bruit de conque."†

It may perhaps be as well to notice here that a warm discussion has been carried on in France, respecting the danger to be apprehended from injections into the uterus in various diseases of that organ. M. Hourmann found that an injection thrown up into the uterine cavity in a case of leucorrhœa, produced immediate pain in the left iliac region, and was followed by symptoms of metro-peritonitis, for which the most energetic treatment was required. From experiments afterwards performed, it was ascertained that injections with an arterial syringe might be made to pass into the fallopian tubes. Similar occurrences have also been

* *Provincial Medical and Surgical Journal,* February 13th, and July 17th, 1841.

† *Provincial Medical and Surgical Journal,* June 12th, 1841.

reported by M. Leroy d'Etiolles,* and M. Guillemin, of Rombas.† The subject has been also investigated by M. Vidal de Cassis,‡ and M. Leroy d' Etiolles;§ and discussions have taken place upon it in the Medical Society of Paris.‖ Upon the whole the practice would not seem to be without danger.

Diseases of the skin.—In briefly alluding to this class of affections, I may notice that in a paper written by Dr. Krause, of Dantzic,¶ to prove the invariable dependence of scabies upon the presence of a minute acarus, it is stated that the insect may establish itself and the disease occur, under circumstances of cleanliness, or in persons having a very thick skin, without the appearance of vesicles.

Examples of that rare disease, molluscum contagiosum, have recently been seen and described by Dr. W. Henderson, of Edinburgh,** and Dr. Paterson, of Leith.††

In this place may perhaps be mentioned a singular instance of the secretion of air from the skin, related by Sir Francis Smith.‡‡ The subject was a dyspeptic patient, who suffered greatly from flatulency and eructations, and the air or gas was observed exuding from the surface of the skin while

* *Revue Médicale*, September, 1840.

† *Gazette Médicale de Paris*, October 10th, 1840.

‡ *Gazette Médicale de Paris*, July 11th, 1840.

§ *Bulletin de l' Académie Royale de Médecine*, May, 1841, p. 198.

‖ *Revue Médicale*, August, 1840;—See also *Annales de la Chirurgie*, February, 1841.

¶ *Wochenschrift für die gesammte Heilkunde*, July 25th, 1840.

** *Edinburgh Medical and Surgical Journal*, July, 1841, p. 213.

†† *Edinburgh Medical and Surgical Journal*, July, 1841, p. 279.

‡‡ *Dublin Journal of Medical Science*, January, 1841, p. 454.

the patient was in a warm bath. No attempt at collecting and analysing a portion of this gas appears to have been made.

Rheumatism.—The most effective treatment of acute rheumatism still continues a problem. The results of the plan adopted by MM. Gendrin and Solon, which consists in the exhibition of nitrate of potass in large doses, have been reported by M. Aran.* The average duration of twelve cases thus treated was fourteen days from the period of attack; that of the treatment was eight days. These results are to the full as favourable as those obtained by M. Bouillaud from his repeated bleedings, and not open to the same objections. Dr. Henderson, of Edinburgh, reports some cases treated by opium with good effect,† a practice which has often been had recourse to, although the circumstances in which it is most calculated to afford benefit have not been distinctly pointed out.

Parasitic animals.—The origin of scabies from the attacks of a parasitic animal seems now to be well established. The inconveniences attendant upon the location of pests of this description in other parts of the system are but too well known. Among the more recent discoveries is that of the occurrence of the larva of a dipterous insect in the urine by Professor Owen.‡ Cases of acephalocysts in the

* *Journal des Connaissances Médico-Chirurgicales*, February and April, 1841.

† *Edinburgh Monthly Journal of Medical Science*, May, 1841.

‡ *Annals and Magazine of Natural History*, February, 1841.

brain have been reported by M. Michea* and Dr. Casper,† and in the lungs by Dr. Simon.‡ From the number of remedies recommended for the expulsion of intestinal worms, it may be inferred that those in ordinary use are very uncertain in their success. The root of the male fern is highly extolled against tænia by M. Trousseau§ and Dr. Ronzel, pére,‖ the latter of whom has employed it in more than one hundred cases with invariable success.

Carcinoma.—Some very important researches on the development of carcinoma have been entered into by Dr. Langenbeck, who is led to doubt the correctness of those views which place the original development of cancer in the capillary system. He has found cancerous matter in the veins in three different stages: first, quite unconnected with the coats of their vessels; second, slightly adherent thereto; and third, strongly adherent, and so united with the coats as to give them the appearance of being transformed into a cancerous mass. From comparing these appearances with the progress of the disease, he concludes that the development of cancer depends upon the multiplication of cellules, in a manner similar to that which occurs in all other organized products. By injecting carcinomatous matter into the femoral veins of a dog, Dr. Langenbeck succeeded in causing the develop-

* *Gazette Médicale de Paris*, November 21st, 1840.

† *Wochenschrift für die gesammte Heilkunde*, March 27th, 1841.

‡ *Gazette Médicale de Paris*, February 20th, 1841.

§ *Provincial Medical and Surgical Journal*, January 9th, 1841.

‖ *Revue Médicale*, October, 1840.

ment of tubercles in the lungs of the animal, resembling in every respect the carcinomatous tumours of the lungs in man.*

THERAPEUTICS.

The effects of electricity, as a remedial agent, have been tried in various diseases by Dr. Golding Bird.† The remedy seems to have been employed with great advantage in chorea, in paralysis from lead, rheumatism, local injury and hysteria, and in amenorrhœa. In other diseases, such as amaurosis, deafness, chronic rheumatism, and sciatica, though benefit was occasionally derived, the results were not such as to warrant any general conclusions. In no instance was electricity of the slightest service in epilepsy, or other convulsive affections in which the brain was involved. Cases of paralysis also, in which there was decided structural lesion, do not appear to have been benefited by the use of this agent.

Another of those extravagant delusions, which from time to time take root in the reveries of an over-heated imagination, has made its way from that country of strange and mystical conceits—Germany. I allude to the hydro-therapeia, or cold water cure of Priessnitz. This system, which rivals in absurdity its congeners, mesmerism and homœopathy, like them musters its thousands of credulous votaries; and after a ten years' concoction in its native soil, originally an obscure village in Silesia,

* *Gazette Médicale de Paris*, September 19th, 1840;—*Provincial Medical and Surgical Journal*, October 24th, 1840;—*Edinburgh Medical and Surgical Journal*, January, 1841, p. 251

† *Guy's Hospital Reports*, April, 1841, p. 84.

has at length attained sufficient notoriety to challenge the attention of the French academy. By a commission of this body it has been most unequivocally condemned; and to detain you with any attempt at making known its principles would be idle and unprofitable. It would moreover be altogether superfluous, as there can be little doubt but that before long we shall have its professors and its disciples in sufficient abundance amongst ourselves.

A paper on the circumstances which favour the therapeutic action of iodine has been drawn up by Dr. Mojsisovits, from the examination of upwards of eight hundred cases, in which the remedy was employed.* The iodide of potassium and iodide and biniodide of mercury are considered to be the most useful preparations; the tincture of iodine the most uncertain and injurious. The activity of the remedy is said to be greatest in clear and dry weather, and when the epidemic constitution is inflammatory and catarrhal. On the other hand, when small-pox, puerperal fever, and diarrhœa are prevalent, its action is almost null. Bread, potatoes, rice, oatmeal, and all substances which contain fecula or starch, are said to be incompatible. Iodine causes as critical effects, salivation and a miliary eruption or rash resembling scarlatina. Salt water baths contribute much to favour the action of the iodine. The diseases in which it was found most efficacious were certain chronic syphilitic affections, and especially such as are the combined result of syphilis and mercury, and various scrofulous de-

* *Medicin. Jahrb. des österreich. Staates*, in *Gazette Médicale de Paris*, March 20th, 1841.

generations. This is nothing more than what is already well known in this country, but is worthy of notice, as being the result of a large number of observations. The injurious effects sometimes arising from the employment of the iodide of potassium and the iodide of starch have been pointed out by Dr. Adair Lawrie, of Glasgow.* The mucous membranes of the eyes and air-passages are said to be especially liable to become affected. In one instance the employment of the medicine was followed by urgent dyspnœa and loss of voice; in another, by excruciating head-ache, acute pain in the eyes, profuse secretion of tears, and intense pain in the side, (nostrils?) with swelling and continuous discharge of clear serous fluid; in a third, by fatal dyspnœa; in a fourth, by acute congestion of the conjunctiva, pain of chest, hoarseness, cough, and dyspnœa; in a fifth, by profuse papular eruption, which disappeared on the iodine being omitted, and re-appeared on its being again resumed, followed by sore throat, acute dyspnœa, and hoarseness, with fatal result, the mucous membrane of the upper part of the larynx, rima glottidis, and epiglottis being found œdematous on inspection; in a sixth, by intense headache, slight salivation, and sore throat; and in a seventh, by severe headache. Dr. Lawrie has never seen these preparations act as irritants to the mucous membrane of the intestinal tube, nor has he ever observed them to produce emaciation or atrophy of the mammæ or testicles.

Sulphur has been found beneficial by Dr. Munk in certain spasmodic diseases, and especially in angina

* *London Medical Gazette*, July, 1840.

pectoris and in cramp of the stomach, and, applied externally, in cramps of the extremities.* It has also been recommended by Mr. Clay, of Manchester, in chronic rheumatic affections, both externally, in the form of plasters applied to the wrists and ancles, and internally.†

The effects of platinum have been made the subject of experimental research by Dr. Ferdinand Hoefer. The preparations employed were the perchloride and the double chloride of platinum and sodium. They are both poisonous, but less dangerous than the salts of gold, or the bichloride of mercury. The chloride of platinum and sodium is the milder preparation, and taken internally is said to have a diuretic action. The perchloride of platinum applied in solution produces itching of the skin, followed by a cutaneous eruption; and taken internally occasions headache, and reacts on the nervous centres. The action of this metal seems to be alterative, analogous to that of gold and mercury, and it proves chiefly useful in syphilitic and rheumatic affections.‡

The disadvantages occasionally attendant upon the employment of the nitrate of silver have induced Mr. C. H. Lane to make a trial of the oxide, which he has found to be more manageable and milder in its effects, and not liable to the same objections. Externally the oxide has been beneficially used, in the form of ointment, in syphilitic ulcerations and in gonorrhœa. In epilepsy its good effects would

* *Lancet*, July, 1840.

† *Lancet*, August, 1840.

‡ *Gazette Médicale de Paris*, November 28th, 1840.

seem to be questionable; but as a sedative and tonic in gastralgia, and in several forms of dyspepsia dependant upon irritable stomach, both Mr. Lane and Dr. Golding Bird, by whom also the remedy has been tried, speak very highly of its effects. Mr. Lane is also disposed to expect much from it in chronic diarrhœa and in hæmorrhagies, considering its action in these diseases to be analogous to that of lead, and at the same time unattended by the risk of the unpleasant and deleterious effects which that agent too often produces. Its local application is without pain, the oxide having no caustic properties.*

In consequence of the extensive use of various preparations known under the name of fluid magnesia, it may be as well to mention that Dr. John Davy, who has carefully analysed the one known as Dinneford's Solution of Magnesia, is inclined to doubt the existence of the peculiar virtues, attributed to the magnesia from its being in the fluid state. Dr. Davy is of opinion that from the separation of the excess of carbonic acid, the magnesia must be deposited in the stomach in the form of minute prismatic crystals, and indeed these crystals are sometimes deposited on the interior of the bottles containing the solution, before the corks are drawn.†

Attention has been called by Dr. Joseph Williams‡ and by Mr. Bree, of Stowmarket,§ to the occurrence of deafness after large and repeated doses of

* *Medico-Chirurgical Review*, July, 1840, p. 289.

† *Edinburgh Monthly Journal of Medical Science*, May, 1841.

‡ *Lancet*, July, 1840.

§ *Lancet*, August, 1840.

quinine, which has been attributed to the effects of that medicine. In one of the instances recorded, the hearing, though partially regained on the omission of the medicines, was never perfectly restored.

The employment of veratria in dysmenorrhœa, in the form of ointment rubbed over the sacrum, as recommended at the Southampton meeting of the Association by Dr. Bushnan, of Castle Cary, has since been tried with good effect by our respected Vice-President, Dr. Jeffreys; and other evidence in favour of this treatment has been collected by Dr. Bushnan himself.* The wood anemone (*Anemone nemorosa*) has been recommended by Dr. Fosbroke, of Ross, as a substitute for sabadilla and veratrine, as an external irritant, and as a hydragogue cathartic in amaurosis and eye cases; and Dr. Fosbroke thinks it worthy of trial also in dropsies, and perhaps in deafness.† An excellent essay on the physiological and therapeutic effects of colchicum, to which the prize of the Harveian Society of Edinburgh was awarded, has recently been published by Dr. R. Lewins, junior.‡ The effects of the remedy in gout and in nervous diseases occurring in persons of a gouty diathesis, in some states of typhoid fever with deficient urinary secretion, and in scarlatina, are highly spoken of.

The recent observations of Professor Christison§ on the effects of opium, employed either alone, in combination with ipecacuan, or in aid of bloodletting, with the view of arresting acute internal

* *Provincial Medical and Surgical Journal*, October 10th, 1840.

† *Lancet*, April 3rd, 1841.

‡ *Edinburgh Medical and Surgical Journal*, July, 1841, p. 185.

§ *Edinburgh Monthly Journal of Medical Science*, February, 1841.

inflammations, though not altogether new are valuable, as tending to bring the advantages of this mode of treatment more prominently forward. Coryza, catarrh, influenza, and dysentery, it is stated, may often be cut short by a full dose of opium administered alone early in the attack. In acute cynanche tonsillaris and febrile catarrh the opium is recommended to be given with the same view, in conjunction with ipecacuan, as in Dover's Powder. Cases of nephritis and peritonitis are instanced as exemplifying the beneficial action of the remedy in aid of bleeding. Of the great value of opium in acute rheumatism, as pointed out by Heberden, and by Dr. Corrigan and several other recent writers, Dr. Christison seems to be scarcely aware.

The properties and powers of the new remedial agent, monesia, have been further investigated by MM. Derosne, Henry, and Payen.* Its good effects have been chiefly evident as a tonic and expectorant in chronic bronchitis, and in chronic affections of the mucous membranes generally, as in imperfect digestion, chronic gastritis and gastro-enteritis, and diarrhœa. It has also been highly extolled in uterine hæmorrhage by MM. Daynac and Martin St. Ange.

An addition to our resources in the class of antispasmodics has been made by Löwenhardt, who has used the bezoar of the lachrymal fossa of the deer in hysteria, epilepsy, dysmenorrhœa, prolonged hooping cough, and other diseases in which castor, musk, valerian, &c., are often em-

* *Journal des Connaissances Médico-Chirugicales*, January, 1841.

ployed.* It does not appear however that the bezoar is more certain in its effects than the remedies mentioned, or that it possesses any other advantages over them.

A series of experiments on the powers of medicinal substances has been in course of performance for some years past by a Society at Leipsic. Some of these have been published by Dr. Jörg, referring to the action, upon persons in health, of nitre, cherry laurel water, bitter almond water, Vauquelin's prussic acid, Von Ittner's prussic acid, valerian, serpentaria, the flowers of arnica, the root of arnica, camphor, castor, musk, St. Ignatius' bean, assafœtida, opium, digitalis, and tincture of iodine. Among the inferences deduced by Dr. Jörg are that the employment of valerian and assafœtida should be discontinued altogether in hysteria; and that opium, which is characterized as a stimulus to the brain, extending its effect to the whole nervous system, and secondarily inducing, when the congestion of the brain has reached a considerable extent, a state of depression and relaxation, should rarely if at all be used, and that only in small doses from half to a quarter of a grain, at intervals of from six to twenty-four hours or more.† It is obvious however that little reliance can be placed on these experiments as affording indications for practice, since the conditions of the system, which often give to them and other remedies their peculiar value, were obviously wanting in the healthy subjects upon whom they

* *Medicinische Zeitung*, August, 1840; *British and Foreign Medical Review*, January, 1841, p. 233.

† *London Medical Gazette*, September 1840.

were tried. Dr. Jörg and the German Society have in fact been ascertaining the effects of these agents, considered as poisons to the healthy, rather than as medicines to the sick. Still there is much valuable information to be derived from the examination of the facts, by those who will undergo the labour of going through them, although the conclusions drawn from them may not in all cases be such as are to be implicitly relied upon.

MEDICAL JURISPRUDENCE.

In the summary which I have endeavoured to draw up of the progress made within the last year in anatomy, physiology, and practical medicine, it has been my wish to give as full an account of the accessions to our knowledge in these subjects, as the materials at my command and the necessarily limited scope of an address of this description would admit. In the observations which I am now about to offer, I must not pretend to do more than indicate a few of the leading facts, accumulated by the industry and research of the many assiduous inquirers engaged in the pursuit of legal medicine. To follow the progress of the medical jurist and toxicologist, through all the intricacies of refined analysis which have lately been brought to bear upon this subject, would require a greater call upon your time and patience than could now be made; while the review which I have myself been induced to take of these numerous and important investigations, has given rise to the conviction that at no very distant period the pursuit of legal

medicine and the inquiries necessary to give correct and satisfactory evidence upon cases of this description, must be separated from the practice of medicine and surgery. No physician or surgeon in full practice can pretend to give up the time now required for a doubtful investigation of this nature, without injuriously withdrawing his attention from the more responsible duties of his daily avocations; and it would materially conduce to the interests of the public service, were some official persons, well instructed in the principles of medical knowledge, to be appointed for conducting all investigations of this nature.

Pregnancy, gestation, &c.—A case of prolonged gestation, where the child was carried ten months and thirteen days, is reported by Dr. Manley, of New York,* in which the evidence seems to be of the most unexceptionable character. M. Bricquet has pointed out that the arteries of a uterus which has once been impregnated present a spiral appearance, produced, as he asserts, by the changes taking place during pregnancy, and never met with in the unimpregnated womb.† Important evidence may sometimes be obtained in certain medico-legal cases from the knowledge of this fact, should future observation prove it to be correct.

Infanticide.—Some observations have been published by Drs. Vittadini and Trezzi, of Milan,‡ to

* *American Journal of the Medical Sciences*, January, 1841, p. 59.

† *Bulletin de l' Academie Royale de Médecine*, March, 1841;—*Edinburgh Medical and Surgical Journal*, July, 1841, p. 289.

‡ *Annali Universali di Medicina* in *Gazette Médicale de Paris*, April 24th, 1841.

show that desiccation of the umbilical cord is a purely physical phenomenon, and of no value as a medico-legal sign, no difference being perceptible in a cord the desiccation of which had taken place during life, from one in which the process has occurred after death. The relations of intra-uterine pathology with infanticide in general, and the little reliance which can be placed upon the employment of Ploucquet's test, have been well pointed out by Dr. Boyd;* and in an elaborate investigation undertaken by Dr. Guy, the results of which have since been published,† the inference is drawn, from a large number of facts, that "the static lung tests are utterly useless for all practical purposes, and ought not to be relied on in medico-legal inquiries."

Hanging.—M. Orfila, in a memoir read before the Academie Royale de Medecine,‡ has shown that none of the signs, indicated by authors, as denoting that suspension has taken place before or after death, can be depended on singly, and that it is only by a careful consideration of all the appearances that a just conclusion can be arrived at.

Poisoning.—The valuable memoirs of M. Orfila on the application of Marsh's apparatus to the detection of arsenic, and the controversy which has arisen upon the various sources of fallacy which the ingenuity of experimentalists has detected in the employment of this method, form in themselves a

* *Provincial Medical and Surgical Journal*, October 31st, 1840.

† *Edinburgh Medical and Surgical Journal*, July, 1841, p. 46.

‡ *L'Experience*, October 8th, 1840.

complete study. There can be no question but that the process is well adapted for the detection of minute quantities of the metal, but the very delicacy of its indications renders it liable to the objections urged against its use in legal medicine. The most important of these objections are the danger of confounding the appearances afforded by other metallic matters which may be accidentally present, and the possibility of the arsenic being itself derived from sources foreign to the actual purposes of the inquiry. In the former of these cases it is shown that crusts and spots, much resembling those procured from arsenic, are formed by other metals,—for instance, by antimony: in the latter it has been alleged that arsenic may exist naturally in the human body, as it is indeed now admitted to do, both in the bones* and in the blood; that it may exist in the soil from which the body has been removed, in cases where exhumation has taken place; that it may have been introduced into the stomach with the antidotes employed against it, the tritoxide of iron thus used being known to be frequently contaminated with arsenic; and that the tests used in the process employed for its detection, the sulphuric acid and the zinc for instance, may either or both contain arsenic, which, from the extreme delicacy of this method, will be shown in the results obtained. Some of these sources of error are readily avoided; others require comparative trials of much nicety. M. Orfila, it must be confessed, has succeeded in pointing out methods by which the causes of error alluded to may

* This has been recently denied by Dr. Rees: *Guy's Hospital Reports*, April, 1841, p. 171.

be removed, but they are such as many of those who are sometimes called upon to give evidence are not competent to perform. An instance of the successful application of the process has however been afforded by Mr. Rayner, of Stockport,* which deserves to be referred to as exhibiting much skill and care in a case, or rather a series of cases, of considerable difficulty. To enter further upon the subject here is impracticable, I must therefore content myself with referring to the memoirs and communications which are to be found in various publications,† and in particular to a notice of the memoirs on poisoning by arsenic, antimony, and copper, communicated by M. Orfila to the Academie Royale de Medecine, in the *British and Foreign Medical Review* for January last.‡

Mr. Alfred Taylor has endeavoured to ascertain the minimum quantity of arsenic necessary to destroy life, and points out some of the extraneous causes which exercise an influence on the operation of the poison. Those to which he alludes are age, sex, peculiarity

* *Provincial Medical and Surgical Journal*, November 28th, 1840.

† See *Bulletin de l' Academie Royale de Médecine*, August 4th, 1840; March 16th, 22nd, and 30th, 1841;—*Gazette Médicale de Paris*, October 31st, and November 7th, 1840; and June 26th, 1841;—*L'Experience*, November 26th, and December 17th, 1840;—*Journal de Médecine*, January, February, and March, 1841;—*Journal de Chimie Médicale*, January and February, 1841;—and for modifications in the construction of Marsh's Apparatus, *Journal de Chimie Médicale*, February, March, May, and June.—See also *London Medical Gazette*, November 13th, 1840; and February 19th, 1841;—*Lancet*, November 14th, 1840;—*Edinburgh Medical and Surgical Journal*, April, 1841, p. 559; and July, 1841, p. 295;—*Provincial Medical and Surgical Journal*, October 10th, 1840; and June 2nd, 1841;—*Dublin Medical Press*, March 3rd, and April 7th, 1841, &c. &c.

‡ *British and Foreign Medical Review*, January, 1841, p. 37.

of constitution, and the state of bodily health, each of which conditions ought to modify the opinion of a medical witness in his statement as to the quantity necessary to produce death. This has been variously estimated by different authorities at from two grains to two drams. In one of Mr. Taylor's cases, a quantity, amounting to not less than two grains and a half, was ascertained to have been taken in wine by a gentleman without fatal effects, though serious symptoms were produced and perfect recovery did not take place for several days.* With regard to the period in which arsenic may prove fatal, Mr. Foster, of Huntingdon, mentions a case† in a child, aged two years and a half, in which death took place in two hours, and probably less, from the time of swallowing the dose. Dr. Christison refers to a case which terminated fatally in two hours; and an instance which was fatal in less than four hours is mentioned by Dr. Beck.‡

Among the more interesting results relating to the subject of other metallic poisons, are their detection in different parts of the body and in the secretions. Lead§ and antimony,‖ as well as arsenic, have been found in the urine, and mercury has been discovered in the bones; and more recently lead has been detected by Mr. Alfred Taylor in the milk.¶

* *Guy's Hospital Reports*, April, 1841, p. 21.

† *Lancet*, May 22nd, 1841.

‡ *American Journal of the Medical Sciences*, January, 1841, p. 57.

§ *Journal des Connaissances Médico-Chirurgicales*, January, 1841;—*Bulletin de l' Academie Royale de Médecine*, February 23rd, 1841.

‖ *Journal des Connaissances Médico-Chirurgicales*, January, 1841.

¶ *Guy's Hospital Reports*, April, 1841.

MEDICAL STATISTICS.

Several statistical documents of great importance have added to our knowledge of the circumstances under which disease occurs, and in some instances have led to the development of the laws by which its progress is regulated. Foremost in this respect stands the report issued by the Registrar-General,* which, in addition to the tables and details connected with the causes of death, and the various influences of locality, density of population, climate, season, occupation, &c., contains an attempt to deduce the laws regulating the progress of the epidemic small-pox, which prevailed in this country in the years 1837, 1838, and 1839. The chief value of this report to the medical inquirer rests with the tables, and the able analysis of them, drawn up by Mr. Farr. Some valuable suggestions for an improvement in the plan of registration, have been published by the Edinburgh College of Physicians.† It may however be doubted how far the difficulties connected with the subject will admit of these suggestions being carried into practice.

A report of the Marylebone Infirmary has been drawn up by Dr. Boyd ;‡ and Mr. Ryland continues his reports of the Birmingham Infirmary.§ It is much to be regretted that these examples should not be followed, as nothing would tend more to increase our knowledge of the causes of disease than reports

* *Second Annual Report of the Registrar-General,* 1840.

† *Edinburgh Medical and Surgical Journal,* July, 1841, p 140.

‡ *Edinburgh Medical and Surgical Journal,* April, 1841, p. 304.

§ *Transactions of the Provincial Medical and Surgical Association,* vol. ix., p. 481.

of this description regularly furnished from different parts of the kingdom. The statistics of individual diseases or classes of disease, and the influence of climate and other external causes on their development and progress, are illustrated in the valuable reports on the cases of pneumonia and rheumatism occurring in the Hotel Dieu of Paris, by M. Saussier;* of pulmonary and rheumatic diseases by Dr. Samuel Forry, of the United States Army Medical Department;† of rheumatism by Dr. Lyon, of Manchester;‡ and of the Birmingham Eye Infirmary, by Mr. Middlemore.§ A valuable report on the mortality of lunatics has been presented to the Statistical Society of London by Mr. Farr;‖ and a report of an admirably conducted asylum in this neighbourhood, from its first establishment in 1796, embracing the results of nearly half a century, has been prepared by the resident surgeon, Mr. Thurnham.¶ I cannot but look upon the information furnished from this excellent institution, (the Retreat,) as of especial interest and importance, comprising, as it does, the results of an inquiry amongst a class of individuals who, by the well-timed restraints of early education, the calmness of their general deportment, their highly moral qualities, and the well-regulated tenor of their lives, would seem to be placed almost with-

* *L'Experience*, August 27th, and September 17th, 1840.

† *American Journal of the Medical Sciences*, January, 1841, p. 13.

‡ *Transactions of the Provincial Medical and Surgical Association*, vol. ix., p. 338.

§ *Transactions of the Provincial Medical and Surgical Association*, vol. ix., p. 499.

‖ *Quarterly Journal of the Statistical Society*, April, 1841.

¶ *Statistics of the Retreat*, 1841.

out the pale of those conflicting and agitating influences which operate so strongly in giving rise to the various forms of mental alienation. To enter into the consideration of the many valuable particulars embraced in this essay would here be out of place, and I must refer you to the report itself for the information which I am obliged reluctantly to withhold. I cannot quit this subject however without directing your attention to the able report of the Hanwell Asylum, recently presented by Dr. J. Conolly, and to the excellent observations on the system of seclusion adopted in that institution, as a substitute for the more objectionable modes of restraint formerly practiced.* The progress of this system at Hanwell, under the management of Dr. Conolly, must, as Mr. Thurnham justly observes, be watched with extreme interest; and whatever may be the results which further experience shall produce, most fervently is it to be hoped that success may crown the humane efforts of that truly enlightened physician, to render more tolerable the burden of this most afflicting of all the ills which human flesh is heir to.

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Several works of importance have been published during the period over which this retrospect extends. The second portion of Professor Owen's Odontography, which for the beauty and excellence of its illustrations cannot be too highly estimated, has recently appeared, and carries on that work from

* *The Fifty-fifth Report of the Visiting Justices of the County Lunatic Asylum at Hanwell.* London, 1840.

the dental system of the scaroid fishes, through the batrachian and ophidian reptiles, into that of the saurian tribes, some of the plates belonging to the higher orders being also given. Three numbers of the Cyclopædia of Anatomy and Physiology have also appeared within the year, the last of which terminates with an excellent article on the marsupialia by Professor Owen. An admirable work on Organic Chemistry, containing many original views, and intimately connected with questions relating to medical science, has been produced by Professor Liebig, of Giessen. Among the treatises devoted to pathology and practical medicine, I must not omit to mention the second volume of Dr. Hodgkins's Lectures on the Morbid Anatomy of the Serous and Mucous Membranes; nor the new and revised edition of Dr. Prout's work on Diseases of the Urinary Organs. The treatise of Dr. Laycock on the Nervous Diseases of Women, that of Dr. Marshall Hall on the Diseases and Derangements of the Nervous System, and the recent republication of Sir James Clark's work on the Sanative Influence of Climate, must also be mentioned here. Without extending these remarks further, I must be permitted also to notice, as every way deserving of encouragement, that most useful compendium, Mr. Braithwaite's Retrospect of Medicine and Surgery, which, as affording a selection of much that is valuable from the mass of matter contained in the numerous periodicals of this country, is calculated to facilitate reference, and to be of the greatest service to those whose time is not always at their command.

Before bringing these observations to a conclusion I must entreat your forbearance while I pause for an instant on a less grateful theme. Many and severe have been the losses which medicine has experienced since last we met. Landré-Beauvais, Brera, Esquirol, James Hope, Howship, Lendrick, Sedillot, have terminated their career, marked alike by usefulness to their fellow-creatures and honour to themselves. Nor has our own Association escaped the requirements of that inevitable mandate which the highest as well as the most lowly must obey. Dr. Tweedie John Todd, for many years one of the leading physicians of Brighton, was possessed of considerable talents, learning, and general acquirements, together with "that tact, 'unteachable, untaught,' without which man's learning is of slight avail in practical medicine." He was the author of several papers on Natural History, and one of the contributors to the Cyclopædia of Practical Medicine; but his fame will hereafter rest on a work of a high standard of excellence, 'The Book of Analysis,' in which he endeavoured to point out the means of applying the principles of induction to medicine and the natural sciences.*

I have but to mention the name of our late honorary associate, Sir Astley Cooper, to awaken your sympathies and to excite anew those vain regrets which the contemplation of departed worth never fails to call forth. Who can look back to the honourable career of that truly great man, devoting the riper years of his matured judgment to the cultivation of his science, and almost to

* *British and Foreign Medical Review*, October, 1840, p. 599.

the last hour of his life sacrificing, to the desire of communicating that information which he knew so well how to give, the natural love of rest and tranquillity which advancing years beget. Who can contemplate him, evincing such devotion to the great object of his life, without feeling stimulated by his illustrious example to attempt, each one within his own sphere and to the compass of his own powers, in like manner to benefit his fellows. Many of you who now honour me with your attention have known this eminent person,—have communed with him face to face,—have derived from his instructions a portion of that knowledge by which you are enabled to dispense the blessings of health to the sufferer from sickness,—and, in turning to the records of his many and highly valued labours, can animate the language in which they are written, with the well-remembered tones of his voice and the peculiar characteristics of his manner. The highest eulogy which I could bestow, the most touching language in which I might attempt to describe the loss we have sustained, would shadow forth but faintly the feelings of attachment and respect with which you regard his memory.

I have only now to thank you for the kind attention with which you have listened to this retrospect. It has been my endeavour to make it as comprehensive as the nature of an address of this description would admit. If in the attempt to accomplish this I have encroached too much on your time and wearied your patience, the wide sphere of these inquiries, the multiplicity of objects which I have had to contemplate, and the difficulty of selection

where so much of interest and practical importance presents itself to the view, must plead my excuse.

The boundaries of knowledge are widely extended, far beyond the powers of any industry, however unwearied, to traverse,—of any intellect, however exalted, to embrace within its grasp; but observation and reflection may be exercised by us all, and the main end of our aspirations after truth should be, so far as this world is concerned, to make use of the faculties with which we have been blessed, for the benefit of those who look to us for relief in sickness and in pain. "*Homines enim ad Deos nulla re propius accedunt, quam salutem hominibus dando. Nihil habet nec fortuna tua majus, quam ut possis; nec natura tua melius, quam ut velis servare quam plurimos.*"

PART II.

MEDICAL TOPOGRAPHY.

ARTICLE II.

ON THE

MEDICAL TOPOGRAPHY OF EXETER

AND

THE NEIGHBOURHOOD,

BEING A SKETCH OF THE GEOLOGY, CLIMATE, NATURAL PRODUCTIONS, AND STATISTICS, OF THAT DISTRICT.

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[CONTINUED FROM VOL. VII.]

HAVING in previous volumes of these *Transactions** set forth the physical, civil, and economical history of Exeter, it now remains, in order to complete the sketch, to give a description of the diseases incidental to the neighbourhood. For this purpose the cases which have been treated at the Exeter Dispensary will be referred to. The cases selected will comprehend those patients admitted to this charity during the ten years (viz., from 1825 to 1834 inclusive) which have hitherto occupied our attention; this period has been chosen in order that the local influence of climate, &c., may be better illustrated and compared.

* Vols. vi. and vii.

The cases which were admitted during this period amount to 11,258, a number, especially as no restrictions prevail as regards the admission of patients, in every way adequate to give a fair and satisfactory view of the nature of disease as occurring in the district. These cases are arranged under different classes, on each of which such observations as appear necessary will be made. Before, however, the discussion of the several diseases is entered upon, the three following tables, made up from the total number of cases, are appended. In these the whole of the diseases are brought in apposition with each other: the months in which they occurred; the relative proportions of disease in each sex; together with the average age at which they occurred.

TABLE I.

	Membs.	Male.	Female.	Av. age	Per cent.	Proportion.
Fever	1341	437	904	31	11.9	1-8 ... 530
Eruptive fever	80	31	49	8	.7	1-140
Rheumatism	456	237	219	42	4.	1-24 ... 314
Dropsy	402	143	259	49	3.5	1-28
Scrofula	208	99	109	15	1.8	1-54 ... 26
Scirrhus	46	7	39	37	.4	1-244 ... 34
Dis. of brain	535	215	320	32	4.7	1-21 ... 23
Dis. of heart	114	50	64	37	1.	1-98 ... 86
Bronchitis	1211	482	729	38	10.7	1-9 ... 359
Phthisis	460	177	283	31	4. (17)	1-26 ... 29
Pneumonia	253	147	106	33	2.2	1-44 ... 126
Debility	265	55	210	31	2.3	1-42 ... 128
Diarrhœa	908	376	532	31	8.	1-12 ... 362
Dyspepsia	596	186	410	41	5.2 (14½)	1-22 ... 126
Dis. of liver	85	37	48	36	.7	1-132 ... 38
Gastritis	43	12	31	39	.3 ÷	1-261 ... 35
Female dis.	457	...	457	30	4.	1-24 ... 290
Eruptions	809	323	486	27	7.1	1-14
Diabetes	83	48	35	40	.7 +	1-135 ... 53
Worms	34	14	20	14	.3	1-331 ... 4
Bronchocele	39	1	38	29	.3 ÷	1-288 ... 26
Surgical, &c.	2033	1456	1375	32	25.1	¼
Total	11258	4535	6723	32	100.	
Proportion of males to females per cent.	100	40.2	59.8			

TABLE 2.

	1825.	1826.	1827.	1828.	1829.	1830.	1831.	1832.	1833.	1834.	Total.
Fever	100	107	155	113	112	164	187	130	136	137	1341
Eruptive fevers	2	2	4	15	4	5	18	9	13	8	80
Rheumatism	38	28	38	46	25	47	39	43	66	86	456
Dropsy	36	31	36	30	39	30	61	45	44	50	402
Scrofula	16	4	14	17	28	23	20	37	20	29	208
Scirrhus	1	4	1	6	11	5	7	4	2	5	46
Dis. of brain	31	35	55	58	66	58	61	54	49	68	535
Dis. of heart	3	...	4	6	11	21	14	15	13	27	114
Bronchitis	65	63	100	138	123	122	156	105	190	149	1211
Phthisis	25	43	29	44	36	42	60	66	64	49	460
Pneumonia	11	12	12	17	34	31	31	29	52	24	253
Debility	27	30	50	52	51	12	15	17	5	6	265
Diarrhœa	85	84	43	53	41	55	123	138	146	140	908
Dyspepsia	44	53	41	62	64	77	63	44	66	82	596
Dis. of liver	6	1	7	9	2	4	13	16	18	9	85
Gastritis	11	2	1	1	5	...	6	8	6	3	43
Female dis.	30	19	20	16	49	56	53	56	78	80	457
Eruptions	64	66	66	82	66	95	92	95	91	92	809
Dis. of kidney	5	1	11	8	10	9	18	11	4	7	83
Worms	4	5	6	1	5	3	2	2	3	3	34
Bronchocele	4	6	1	4	1	7	7	3	5	2	39
Surgical, &c.	190	181	302	289	304	356	282	263	332	334	2833
Total	778	777	996	1067	1087	1222	1328	1190	1403	1390	11258

TABLE 3.

	Jan.	Feb.	Mar.	April	May	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Avge.
Fever	105	153	131	141	127	119	120	82	92	100	103	68	111
Eruptive fever	4	8	11	3	14	5	7	1	10	5	5	7	6+
Rheumatism	40	43	50	59	49	51	34	33	25	23	23	26	38
Dropsy	39	37	29	43	37	36	35	35	24	34	32	21	33+
Scrofula	15	13	19	18	23	25	15	21	15	15	8	16	17+
Scirrhus	7	7	5	1	2	3	2	5	1	4	4	5	4
Dis. of brain	39	61	52	63	60	51	40	29	25	45	39	31	44+
Dis. of heart	11	5	13	11	15	14	10	6	8	8	7	6	9+
Bronchitis	107	153	127	147	136	80	127	55	53	53	77	96	100
Phthisis	40	38	52	44	40	42	32	40	37	36	32	27	38
Pneumonia	24	30	33	38	15	14	10	13	12	15	27	22	21
Debility	16	17	32	32	35	40	18	15	18	14	13	15	22
Diarrhœa	35	56	50	52	75	61	85	162	147	97	46	39	75+
Dyspepsia	48	36	55	62	72	54	50	53	46	45	41	34	50
Dis. of liver	6	10	9	6	9	9	4	9	4	8	5	6	7
Gastritis	6	3	4	9	4	4	3	1	1	2	3	3	3+
Female dis.	37	38	37	51	42	46	48	43	22	26	36	27	38
Eruptions	69	81	74	78	89	74	72	43	44	68	66	51	67
Dis. of kidney	6	6	7	7	5	11	7	8	4	8	5	9	7
Worms	3	1	5	2	4	2	6	2	2	1	4	2	2+
Bronchocele	6	1	5	2	1	1	3	6	4	4	4	2	3
Total	656	797	800	869	859	744	726	662	594	623	560	513	
Nos. per cent.	7.8	9.3	9.3	10.3	10.2	8.8	8.6	7.8	7.	7.4	6.8	6.	
Relative proportion	1-12	1-10	1-10	1-9	1-9	1-11	1-11	1-12	1-14	1-13	1-14	1-16	

Before making any comments upon these tables it is necessary to explain that in one or two instances the returns, as to the exact nature of the disease, are not always so specific as might be desired. For instance, a case of phthisis may be entered as one of cough simply, consequently such a case does not appear in the tables under its true designation; thus the number of cases of phthisis is lessened, while that of bronchitis, under which cough is comprehended, is proportionably augmented. These errors of course entirely prevent any accurate numerical statement being made of the different lesions occurring in individual organs; but that no inconvenience may arise, as far as the whole is concerned, the cases are so grouped that the relative proportions of affections of the chest, abdomen, brain, &c., may be appreciated with sufficient accuracy, either as compared with each other or with the diseases generally included in the table. For instance, the diseases of the lungs may be seen to comprehend 17 per cent. of the whole diseases of the district while those of the abdomen amount to but 14 per cent., and fevers only to 12.

Table 1, which will be found useful for reference in the course of the following observations, is, by itself, chiefly interesting as showing at one view the proportional occurrence of the several classes of disease, together with the relative liability of sex and age. Thus the 11,258 cases consist of 4,535 males, and 6,723 females, i.e., 40 per cent. of the former, and 60 per cent. of the latter, making an excess of 20 per cent. against female health.

When speaking of the population in a former volume, it was pointed out that the number of

females in Exeter were 10 per cent. in excess over the males, the latter forming 45 per cent., and the former 55 per cent. of the whole; so that, notwithstanding the excess of female population, we may infer that females are more liable to disease than males; and this holds good, although the 4 per cent. of diseases which are peculiar to females be deducted, as well as the 3 per cent. for debility, bronchocele, and scirrhus, which in great measure are proper to and consequent upon the peculiar organization of this sex; for there yet remains an excess of 5 per cent. in the sickness which is common to both sexes. Unless we may suppose that females apply for advice under circumstances of slighter affection than males, though to a certain extent this may be true, yet there can be no doubt that disease is more frequent among them.

The average age of the whole sick admitted is thirty-two years. It is obvious however that it cannot be satisfactorily asserted that this is the period of life most susceptible of disease; we shall not therefore dwell upon this subject, but merely state that an average drawn from the whole list of diseases is liable to an error which does not obtain when applied to the individual affections.

Table 2 is interesting as showing the relative proportion of disease in each year. The gradual increase in the total number of admissions which is observable is not to be attributed to any progressive increase of disease, but to an extension of the charity during this period.

In Table 3, the 2,833 surgical cases, which form part of the other two tables, are omitted. The

remaining 8,425 are so arranged as to show the relative frequency of each disease during the several months of the year. This table is particularly interesting; from it we see that February, March, April, May, June, and July, constitute what may be called the more sickly period of the year, but that the spring months of April and May are those in which by far the greatest amount of sickness takes place. The climate of these two months is characterised by some peculiarities which are worth pointing out. It is between these months of May and April that the rise in temperature is most considerable, amounting to more than one-half of the whole difference which takes place in the temperature between spring and summer; moreover, the difference in temperature between day and night, i.e., between the diurnal maximum and minimum, is more marked than in any of the other months, amounting in April to nearly 39°, and in May to 34° and a half, (30° being the mean diurnal difference during the year.)

The mean barometric height is lower during these two months than in either the two months which immediately precede or succeed them, being in March 29.98, and in June 29.95; while in April it is only 29.83, and in May 29.87. The following table shows the mean maximum and minimum dew-point, with the attendant observations:—

		Dew-point.	Barom.	Therm.	Wind.	Weather.
April	Max.	49 8	29.56	50.6	S.E.	Rainy.
	Min.	32.2	29.96	42.2	N.	Fair.
May	Max.	55.0	30.00	59.4	S.E.	Fair.
	Min.	40.2	29.79	50.8	N.E.	Fair.

The winds which particularly prevail during these months are the north, north-east, and south-east, winds which impart a particularly dry character to the atmosphere; we therefore find them, notwithstanding the frequent occurrence of partial showers, to be months in which the amount of rain that falls is very small; May, indeed, is the least rainy month in the year, the average quantity amounting to one-ninth of an inch. In April it amounts to two-fifths; a portion of this falls in hail, to storms of which, though but rarely occurring in this climate as compared with other parts of England, this month is liable. April and May are also characterized by having more sun-shiny days than the other months; this is a point of much interest, especially when the diurnal variations of temperature are taken into account. We see therefore that these, the most sickly months in the year, are characterized by a sudden increase of temperature, by warm days and cold nights, by an atmosphere which is dry and has a great capacity for moisture, by the fall of but little rain, and by a seductive sunshine; such is a general view of the climate of these months. Now on reference to the table we observe that the diseases which more particularly make up the increase in number are, in April, fever, rheumatism, dropsy, diseases of the brain, bronchitis, and pneumonia, dyspepsia, gastritis, and diseases peculiar to females; in May, eruptive fevers, scrofula, diseases of the brain and heart, bronchitis, dyspepsia, and eruptive complaints. It must however be understood here that it does not follow that because these months are noted for a

greater prevalence of disease that they are also attended by the greatest mortality; on the contrary, they are rather below the average in this respect.*

The period of the year in which the least amount of disease prevails extends from August to January. From the table, No. 3, it might be inferred that December is particularly healthy; but as regards this month, as likewise November to a slight extent, a source of inaccuracy† obtains, which entirely stultifies such an inference. We are inclined to state that September and October constitute the period more especially free from amount of sickness, and that September is by far the healthiest month of the whole year; we shall therefore draw attention to the climate of this month. It is characterized by a mean temperature of 56.9, the mean maximum being 71.1, and the minimum 42.1, giving a mean diurnal difference of only 29°. The decrement in temperature which takes place between August and this month is very considerable, amounting to nearly 6°. The barometer stands at 29.87, with a mean range of one inch. The mean maximum and minimum dew-point, with corresponding observations, is set forth in the following table:—

		Dew-point.	Barom.	Therm.	Wind.	Weather.
Sept.	Max.	59.4	29.52	61.6	S.	Rainy.
	Min.	42.6	29.80	54.0	N.W.	Fair.

* Volume vi.

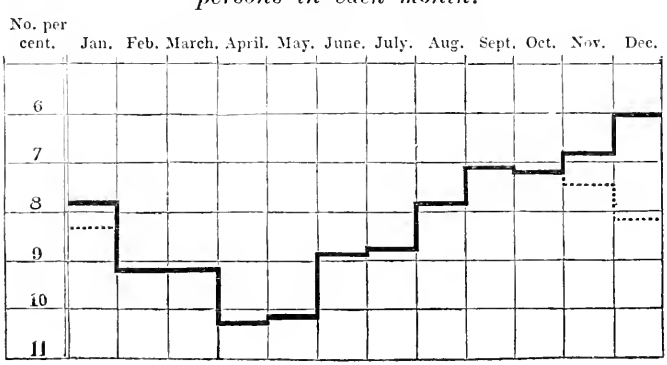
† The inaccuracy alluded to is owing to a deficiency at this period of the recommendations by which patients are admitted; being the end of the year these become scarce, and consequently fewer patients are enabled to present themselves for the benefit of the charity.

Though there is much sunshine in this month yet there are many rainy days, (13,) during which a large quantity of rain is precipitated; this is also the case with the succeeding month. The prevailing winds are from the west; occasionally there is thunder, no snow, and but very seldom hail. From the above we see that this month is rather colder than the mean of the climate, and attended with but, comparatively speaking, slight changes in the diurnal temperature; we also see that the temperature of the dew-point is very near to that of the atmosphere when at its maximum, and very distant at its minimum, so that when warm the air is moist, and dry when the temperature is low. We may therefore fairly conclude that an equable temperature, attended by a moist warm atmosphere, or, in other words, the warm "muggy" Devonshire weather, is congenial to health in this district; while weather with dry easterly winds and a variable temperature is peculiarly obnoxious to it. This bears out an observation which I had long since made, independently of these tables, that the inhabitants of this city, especially if afflicted by chest disease, do not suffer in health so materially during the so commonly styled unwholesome moist weather as when the more bracing winds prevail. On looking at this table, (No. 3,) we find that during September the amount of disease is for the most part materially decreasing; this is especially the case in dropsy, diseases of the chest and brain; this is also the case in the diseases which are peculiar to females and in rheumatism; while, on the other hand, there appears to be an increase in fever, which

becomes yet more prevalent during the two succeeding months. Eruptive fevers also prevail, together with such disease as is more prominently characterised by debility. Diarrhœa, the prevailing disorder of August, and dyspepsia, which more particularly swell the amount of disease in this month, are nevertheless on the decline, and materially lessen in frequency towards the end of September and during the succeeding month.

In order to show at one glance the relative mortality of the several months, the following little diagram is subjoined. I have previously alluded to the error which prevails in the statement of disease during December, as also to a slighter extent in November and January. In the diagram the thick lines exemplify the real numbers per cent. as entered in the books of the Dispensary during each month. The dotted lines represent what may be considered as a more true approximation of the real occurrence of disease.

Diagram, showing the relative number per cent. of sick persons in each month.



Before entering upon the consideration of the diseases in detail, it may be remarked that this district, in common with other parts of the kingdom, suffers occasionally from the occurrence of epidemics. In the published annals of Exeter mention is made of the frequent infliction of plagues and sicknesses, attended by very marked mortalities; but beyond this bare notice there is so little that is definite or characteristic that any lengthened collecting of them would be useless.

Within my own observation the general aspect of disease has partaken of two very separate and distinct characters. During the few years immediately preceding 1828, affections of the serous membranes for the most part prevailed; thus the cases chiefly met with were those of pleuritis, peritonitis, and, amongst children, hydrocephalus, all exhibiting a type of disease requiring the most prompt and persevering antiphlogistic treatment. Since that period, however, diseases having their origin in the mucous membranes, or else involving them in their course, have been of the most usual occurrence, and these have required a treatment rather mild than heroic; in fact it was early learned that the type of disease was changed, and the method of cure which had been previously requisite was now any thing but applicable. I shall now cursorily allude to the epidemics which have more recently occurred. In 1825, inflammations of the serous membranes were exceedingly prevalent; peritonitis, in its severest forms, was of the most frequent occurrence; and, amongst children during this year, hydrocephalus was so frequent as really

to justify one in styling it an epidemic. During the autumn of 1829, English cholera in its most rapid and urgent forms occurred, and was attended by a very signal mortality. In 1831, there prevailed an influenza of a severe character. 1832 was conspicuous, during the months of July and August, for the prevalence of the malignant cholera. In 1834, there occurred a slighter influenza. In 1836, small-pox; followed, in 1837, by hooping cough, and then by scarlet fever; each of these infantile diseases during this period was very fatal in its consequences. In 1837, influenza again occurred; it was very general, and attended, as was the case throughout England, with a severe and painful series of symptoms; and in the spring of 1838, a peculiar form of spotted fever occurred. As mention of these various epidemics will be immediately made in speaking of the several groups of disease composing the above tables, we shall not dwell further on them here.

Fever.—From the tables which have just been stated, we see that out of 11,258 cases, comprehending all diseases, 1,341 consist of fevers; so that nearly one in nine, or 12 per cent. of the whole diseases which occur in this district, are of this character. This is a larger average than I anticipated, for it had always appeared to me that Exeter was peculiarly free, comparatively speaking, from its influence; and so it most certainly is in its worst and most fatal aspects; for it must not only be borne in mind that the above amount comprehends all the milder forms of continued simple fever, as well as the

more confirmed cases of typhus, but also that the cases are selected from that part of the population, which, from the nature of their employment and the scantiness of the means of subsistence, are peculiarly prone to fever. Nevertheless, large as the above proportion is thus made to be, it can by no means be considered a locality particularly favourable to its development, for the average is considerably lower than in many of the other large towns in the kingdom, as London, Edinburgh, Glasgow, Dublin, Worcester, Bristol, &c. As might have been expected, fever varies, both in its absolute and relative frequency, in different years and during different months. With regard to its absolute frequency, nothing positive can be stated, for in this respect the tables are incomplete, as previously pointed out. The relative frequency of its occurrence in different years varies from one-tenth to one-sixth of the whole cases admitted, i.e., from 15.5 to 9.6 per cent., as may be seen in the following table.

Table 4.—*Showing the proportion per cent. of fever cases which occurred in ten successive years.*

1825.	1826.	1827.	1828.	1829.	1830.	1831.	1832.	1833.	1834.
12.8	13.7	15.5	10.5	10.3	13.4	14.	10.8	9.6	9.8

In 1827, the year in which the greatest proportion of fever cases occurred, the climate presented nothing very remarkable; the temperature, as well as the rain which fell, being only rather above the mean. While mentioning this, it may be stated that the two preceding years, 1826 and 1825, in which the

proportion of fever cases was also large, the climate was warm and rather dry; while, in 1833, when the weather was cold and rainy, and in 1834, a year characterized by dry and temperate seasons, the proportion of fever cases was low. In order to appreciate the relative tendency to fever in each month the following table is constructed.

Table 5.—Showing the relative proportion per cent. of fever cases occurring in each month.

Jan.	Feb.	Mar	April.	May.	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.
8	11	9	10	8	8	8	6	6	7	7	5

I need not dwell upon this table: it shows that February is the month the most prone to fever, and that August and September are the least so, as is also the case in a lesser degree with the three preceding and two following months; with regard to December it has elsewhere been pointed out why it may not be taken into account. We see therefore that the fine cold bracing weather, which people so usually congratulate themselves upon as being free from fever, is really the weather most liable to it; while the warm and sultry months of summer are those in which it prevails the least. It is not a little remarkable that the year 1827, in which the greatest proportion of fever cases occurred, was one in which the fewest number of deaths took place;* while in 1833 and 1834, years in which the proportion of fever was but small, the amount of deaths was above the average. The same observation also holds good, as regards the months; for August and

* *Vide* vols. vi. and vii.

September, which, of all the months are the most fatal, are seen to be the most free from fever; while February, the least fatal, is the most prone to its attacks: so that it might almost be inferred that fever is not a fatal disease in this district, and also that the circumstances, which tend to originate it, are not those which involve a large amount of mortality. This somewhat bears out the impression that fever in its severest forms is not a disease very common in this district.

With regard to period of life, it appears that adult age is the most obnoxious to fever. The average age given by these 1,341 cases is thirty-one; this is considerably younger than the average of cases treated and reported by Dr. Craigie,* the mean age of which amounted to forty-five; and a more advanced period of life than those reported by Dr. Tweedie,† where the greatest amount of cases occurred between the ages of twenty and twenty-five.

The fevers which occur in this district are for the most part simple synochus and typhus. Cases of synocha I believe to be very rare,—certainly so, as far as my own observation goes. I have scarcely seen a case of well-marked inflammatory simple fever. Generally speaking, the cases of fever which occur are accompanied by local inflammation in some one or other of the great organs of the body. Nevertheless, there can be no doubt, examples of fever, with sufficiently and even strongly characterized symptoms are met with, in which there are discoverable no

* *Edinburgh Review*, vol. xlvi.

† *Cyclopædia of Practical Medicine*, vol. ii., p. 189.

indications whatever of local lesion, and that they sometimes, though very rarely, proceed to death without there being observable the least trace of it on the minutest *post mortem* examination, so that I cannot but entertain the strongest conviction of the existence of primary and essential fever; in fact, I feel thoroughly assured, from the opportunities which this district has afforded me, that all the different forms of continued fever, whether they be the simple or the inflammatory continued fever, or even typhus itself, may exist and really go through their several stages without any necessary attendant lesion. I am aware that this is a view which does not generally obtain in the present day; and perchance it may be advanced against it that the observations of Louis, which more particularly refer to typhus, are directly in opposition to it. The views and statements of this greatest of our modern observers have been however differently interpreted by me. He by no means asserts that to a diseased condition of the glands of Peyer is to be attributed *the cause* of typhus, but that from the constancy with which he met with lesion there after death from this disease he considers such conditions inseparable from the existence of typhus, and that in fact they constitute its anatomical character. Though I am strongly inclined to view fever, properly so called, as not originating in consequence of derangement either in the solids or fluids, and although I think that many of the cases which I have had the opportunity to watch exhibited at their commencement no characters but what may be referable to functional disorder alone, yet by far

the greater proportion, in fact nearly the whole, as previously mentioned, presented traces sufficiently evident of the presence of some local inflammation; nevertheless in many of these the organic complication was seen to be superinduced according as epidemic influence or personal peculiarity determined; at least it has appeared to me that this may fairly be assumed to be the case from its not being infrequently seen that at certain seasons there is almost an indiscriminate tendency to affections of a particular organ; while at other times, when simple fever only is epidemic, different organs become affected, as constitutional predisposition may direct. In this district then it may be stated that cases of simple and uncomplicated fever do not very often occur, a statement which is particularly true amongst the class of patients from which these returns have been made; for cases of pure fever are proportionately much more frequent amongst those in the better ranks of life than amongst the working classes. This is doubtless owing to the latter receiving the infection of fever under circumstances with which an exposure to the causes of local inflammation is associated.

As far as my own observation goes, it has always appeared to me that in the adynamic typhus fever, as occurring in Exeter, the most frequent complication is with affection of the mucous membranes of the stomach and bowels, then with the viscera of the chest, and more rarely with the cerebrum. In the other and more simple fevers of the district, the chest is the organ most frequently attacked, then the abdomen, and then the brain. In placing com-

plication with the cerebrum thus low, I am of course referring to the early stages of fever, and not to any symptomatic disorder of the brain which may supervene towards the fatal close. When the brain is primarily affected, it is generally by congestion, accompanied by low muttering delirium, with coherence when roused; active and violent delirium is comparatively rare. Primary affection of the cerebrum rarely assumes an epidemic character; it occurs more usually in a few cases only, and at the same time that other cases occur which are characterized by difficult and more general complications. When cerebral affection occurs it may however for the most part be observed that not only is it complicated with lesion of other organs, but that most usually the presence of these lesions had been previously manifested. Affection of the chest, as already observed, most frequently occurs in the ordinary simple fevers; it is in fact very rarely that cases of synochus, if not complicated with the more urgent derangements of the chest, are not attended by some short irritating dry cough, which after a day or two passes into a moist one. I have indeed frequently discovered, by the stethoscope, in very slight cases of fever, when even the patient himself has not directed attention to any inconvenience of the chest, sufficiently well-marked symptoms of a dry catarrh. Fever, with pulmonic complication, occurs chiefly during the winter and spring. It has always appeared to me that it is in these cases in which the greatest amount of inflammatory action takes place with the least tendency to cerebral disorder.

The observation has been made, though by no means universally admitted, that fever is a predisponent cause of phthisis pulmonalis in those who are constitutionally prone to it. On comparing the returns of phthisis with those of fever, as set forth in the tables quoted above, it will be seen that the average age at which each of these diseases prevails is the same, viz., thirty-one. Though this can be only hazarded as a very distant corroboration of such a view, yet I cannot but think that I have seen in more than one instance the symptoms of a fatal consumption, which previously had not manifested itself, fully developed immediately after an attack of fever.

The fevers which are complicated with stomach and intestinal affection are those which present for the most part the adynamic form. They commence in a state of low irritability, which is but very rarely succeeded by any marked symptoms of reaction. They are usually accompanied by pain and uneasiness of the stomach, aggravated on pressure, and not infrequently are attended by a constant and most distressing sickness. When this is the case the tongue is sufficiently indicative of gastric irritation, having usually its tip and edges red and glossy, as if raw ; while its surface, generally whitened, presents a spotted appearance in consequence of the raised state of the papillæ. The bowels are easily acted on, and if once set in motion difficult to control, the skin early becomes dry and harsh, the thirst is excessive, and the pulse is small and quick. On fevers thus complicated running a bad course, the patient is much distressed by the mouth becom-

ing apthous, ulcered, and covered with sordes, and not infrequently there also arise troublesome sloughings of the tonsils, pharynx, and œsophagus. These inconveniences supervene, more especially when children are the subject of this kind of fever, and in them they present indications of much danger. In adults however these local aggravations are not so much dangerous as troublesome; in them they are usually relieved by treatment, and disappear as the general symptoms decline. This form of fever prevails for the most part in hot summers and towards the autumn. It is more rarely met with in the winter and spring.

Fever, complicated with pain and inflammation of the liver, though sometimes met with, is certainly not frequent; in fact, acute forms of liver disease, whether idiopathic or in connexion with fever, are certainly not common in the district.

The febrile eruptive complaints of the skin at times occur very generally, at other times it is rare to see them; they are however more rare than otherwise. The most usual form is that of petechiæ. Vibices are not frequently to be met with. My own observation leads me to think that the cases in which the former occur are more often manageable than not; while the occurrence of vibices and maculæ indicates a state of the system which usually proves fatal.

While upon this topic, a peculiar form of spotted fever may be mentioned, which was epidemic here in 1830. The eruption, though at first sight very similar to petechiæ, on closer examination presented many characters sufficiently different to mark it as

a totally distinct eruption. Nor can it be considered as having any affinity to the white miliary eruption which is occasionally seen to accompany epidemic gastric fever. In fact it may be said that this spotted fever was a peculiar kind of typhus, attended by an exanthematous rash. During the time that this epidemic prevailed, it might be observed that within twenty-four hours after a febrile attack the skin became generally darkened in colour and spotted over, especially on the chest and arms, with spots of a brownish red, sometimes passing into purplish. These spots were larger than petechiæ, and, instead of having defined margins like these latter, passed off gradually into the deepened colour of the surrounding surface. Some of the spots eventually assumed a vesicular character, and generally the sequence was a desquamation of the cuticle; wherefore I am inclined to think that the eruption may be considered as vesicular. This fever, which was generally of an adynamic character, usually set in with the most overwhelming feelings of lassitude and depression; headache, but no very marked mental disability, (excepting in three cases, which occurred in one family; in these, low murmuring delirium continued for nearly three days;) countenance anxious; eyes suffused; pulse quick, small, and wiry; tongue moist, without any very marked coat, though generally whitish, in some cases florid towards the extreme tip; in subsequent stages, towards its centre and back part, it became of a moist brown; slight cough; bowels more often relaxed than otherwise, and at all times very easily acted on by medicine; no great degree of thirst;

the skin warm, though by no means burning. The eruption made its appearance on the second day after the fever, and on the fourth or fifth usually declined. In these cases bleeding and strong purgatives appeared to exercise a most untoward influence; while saline medicines, combined with aromatics, were peculiarly useful. On following this plan of treatment I may almost say not a single case proved fatal.

In 1839 and 1840, fever assumed a hæmorrhagic tendency, and many died in consequence of the bloody discharges poured from the bowels, and which no means appeared capable of restraining.

During the last ten years it has occurred twice if not three times that the external mucous surfaces in children, during a scarcely appreciable attack of fever, have shown a great liability to take on an inflammation of a bad character, attended by copious muco-puriform discharges. In 1834, this was peculiarly the case with the female organs of generation; so much so, that if seen without a knowledge of the presence of fever and its epidemic character, suspicion might have been raised that disease had been communicated, attended with violence.

In 1841, at the time that I am writing this account, amongst children a low fever, accompanied with diarrhœa, is prevailing; and in which not only the throat, (from which in some cases false membranes have been thrown off,) but the conjunctiva has become inflamed. The eyelids, generally swollen, have with difficulty permitted the state of the ball to be observed; soon the secretion becomes copious, and so tenacious as to almost preclude the

possibility of opening the eye. In this way the acrid discharge is pent up; and the little sufferer, in case of life being spared, recovers, with the eye materially injured, if not entirely destroyed.

We may here say a few words on the nature of the treatment which fevers have required at different periods. It will further exemplify the changeableness of the epidemic character; so much indeed is this the case, that one mode of treatment, most beneficial at one time, at another is found to be quite inapplicable. Preceding and about the year 1826, fever partook of a nature which required the most prompt and extensive antiphlogistic management. On its first onset the free use of the lancet and smart purgatives were imperatively called for, while of late years such a course of treatment would have been followed by consequences the most disastrous; a fever so treated would almost immediately pass into a state of low collapse, from which no efforts could recall the system. In fact, for some years past, the free use of evacuants have been almost entirely precluded; the only treatment admissible has been slight purgatives, with mild saline medicines, to which, on occasion, might be added some slight diffusible stimulants, as small doses of ammonia, with a little aromatic confection, valerian, &c. In fact, the fevers which occurred before and during 1826, were for the most part of an inflammatory character; while those prevailing latterly have been adynamic and more closely allied to true typhus.

Fevers of type are of very rare occurrence; occasionally a case may present itself; but, generally

speaking, they are a form of disease not proper to this district. In 1826 and 1827, a few cases occurred, but these were chiefly amongst the excavators of the canal, which was then in the course of extension. These men were exposed, by the nature of the work they were engaged in, to an influence peculiarly fitted to originate intermittent disease. The neighbourhood however presents generally no conditions likely to originate fevers of this character.

I may incidentally allude here to two cases which in some respects are remarkable. In the one, the exciting cause was fright, and a true tertian followed; it occurred in a young girl, æt. 9. The other is the case of a lady, generally resident in Lincolnshire, who, after staying a month in this city, took a little tour in the neighbourhood for ten days, and then, on her return, was attacked by a quotidian in its severest form. She never, during her residence in Lincolnshire, had suffered from any form of intermittent disease.

Eruptive fevers.—Though sporadic cases of the several eruptive fevers are occasionally met with, yet, for the most part, they may be said to occur only epidemically—a considerable period usually intervenes between their reappearance, and then great numbers are affected at the same time.

Measles.—This affection does not offer in its occurrence any local peculiarities worthy of remark. In 1831, many cases occurred. In 1836 this infantile disease was very extensively epidemic; many of the cases were of a malignant form, and

numerous deaths took place in consequence. Generally speaking, however, it is mild in its character. The recurrence of this disease does not appear, as far as I have observed, to belong exclusively to any particular season of the year, nor to any particular kind of weather; it breaks out indiscriminately at all seasons, whether they be dry or moist, hot or cold. Though I have particularly mentioned the above two periods as those in which measles were observed here, it must not be supposed that its occurrence was limited to them. In the ten years of these returns it occurred much more frequently, but at these times it was particularly prevalent. Amongst the lower orders the after effects are often very severe; those most so are coughs and general affection of the chest, disorder and suppuration in the auditory passages, and general weakness of constitution.

Scarlatina has occurred in an epidemic form several times. In 1832, as also in the following year, there were many cases; in 1833, several persons of advanced age were attacked. The cases which are met with in this district are usually mild and very manageable, so much so that the lower orders rarely apply for medical assistance. Sometimes it takes on a severe character. In 1838, it was not only very generally epidemic, but assumed a peculiarly bad aspect. The cases were for the most part of the malignant kind, and attended by the worst form of sore throat; children in great numbers fell victims to its influence. During the continuance of this epidemic, many differences from

the more usual course of scarlatina were presented. I have observed the eruption come out in the natural way, go through its course, and followed by every appearance of convalescence, when relapse has taken place, and the sore throat, together with the eruptive fever, again become re-established. These cases generally proved fatal. In other cases I have seen the eruption assume so completely the character of measles, that had it not been for the presence of sore throat there would have been great difficulty in distinguishing it. In some cases, again, it assumed the vesicular form, the whole surface being covered over with small papillæ, which desquamated. In other cases the scarlet eruption assumed a dull livid hue, and was interspersed with dark-coloured spots, resembling *petechiæ*, but which I am disposed to think were not identical with them. The fever, which usually set in with the headache, vomiting, and rigor, on close questioning, had evidently been some two or three days preceded by sore throat. Though apparently of an inflammatory character, it could bear but little depletion, and the use of purgatives appeared particularly hazardous; under such a course of treatment life seemed to vanish,—so silently and rapidly did the vital powers subside. It appeared, in fact, in the early commencement of this epidemic, that all attempts to counteract its influence were baffled, and that death would ensue in spite of every effort. Latterly I adopted the plan of Dr. Peart, that of giving ammonia; and I must confess, though I commenced its exhibition with something like prejudice against it, that my most sanguine expectations were answered. Under its

influence the patients appeared to cool, and express immediate relief,—indeed subsidence of the more urgent symptoms quickly ensued; I may almost say that not a single case proved refractory. I am inclined to view it as a most valuable medicine in scarlet fever when attended by the putrid sore throat. A medical friend tells me he found equal success in the nitro-muriatic mixture. The exhibition of opium, either in draft or by enema, appeared to me singularly inapplicable; certainly in cases where it was administered a fatal termination early took place. During this epidemic the number of deaths was very great, frequently two or three in the same family fell victims to its influence. Its contagiousness was most fully manifested: in fact so intense was the power of this principle, that in houses where cases occurred, older persons who had previously had the affection were attacked by an irritative fever, accompanied by putrid sore throat; in some of these there was even an irregular efflorence of the skin.

As illustrative of the persistency of contagion in scarlet fever I may mention the following instance. A young lady had this affection; two months after her most perfect recovery I was consulted as to the safety of her visiting some distant relatives where children were. The assurance was ventured of perfect safety. To my surprise, in two distant houses where these visits were paid, the scarlet fever broke out. There could be traced no other previous cases in either neighbourhood, so that the only conclusion to be arrived at was that the contagious principle had been retained and conveyed by this young lady. This occurred in the autumn and winter of 1840.

The after effects of scarlet fever are not often very prominent in this district. Though dropsy with coagulable urine occasionally takes place, yet it is by no means so frequent as reported in other districts. Perhaps the most troublesome of the after affections are running at the ears and an enlarged state of the parotid glands. For this latter affection I believe there is no cure but time, at least no means that I have ever seen employed for dispelling the swelling have succeeded; with regard to the ear discharge, tonic diet and counter irritation behind the ears often effect much; occasionally the hydriodate of potassa appears useful.

Small-pox is occasionally epidemic; it was so in 1837, as it also is at the present time, (October, 1841.) Excepting on these occasions, cases are rarely met with. In 1837, it was very general, and peculiarly fatal; the number of deaths which took place in this city and immediate neighbourhood was very considerable. The cases which occurred assumed every aspect, from the mildest to the severest forms. In many the pustules assumed a dark colour very early in their progress, and as the disease progressed became almost black; for the most part these cases terminated fatally. Several instances of secondary infection took place; some of these were after previous inoculation, some after vaccination; the proportion of these latter to the whole number attacked, however, was not very considerable, certainly did not exceed one in twenty. Those cases which occurred after having previously had the small-pox were for the most part severe,

while those after vaccination were mild, and terminated favourably; in fact, I do not believe a single death occurred; at any rate, after making every inquiry, I could learn nothing to the contrary. Many cases I am fully persuaded are called secondary small-pox which are really primary, for there can be no doubt that security in very many instances is placed in an imperfect vaccination; it is too commonly the case that the different stages of the vaccine vesicle are not properly attended to. This, amongst the lower orders, is often owing to the carelessness of the parents, who, after the operation, do not submit the arm to the observation of the surgeon; if it rise *at all*, they are satisfied. Though doubtless during this period the cases which occurred after vaccination were the true varioloid disease, yet I am inclined to think that, at other times, many affections, such as were formerly placed to the account of swine-pox, chicken-pox, &c., are now all set down as secondary small-pox. I have certainly seen cases called varioloid, which appeared to me nothing more than swine-pox. Notwithstanding vaccination is daily making rapid advances in public estimation, as well amongst the lower orders as the well educated, yet, if the small-pox be not in the neighbourhood, there is some difficulty in inducing the poor to have their children vaccinated; when there is no pressing danger to be apprehended, they are careless. The men offer more opposition to vaccination than their wives. Many instances have occurred where the women evinced the greatest anxiety about it, but were thwarted in their wishes by the obstinacy of their

husbands. Should however danger make its appearance, by small-pox breaking out, then numbers crowd in from all parts, anxiously soliciting gratuitous vaccination; sometimes, at the same moment, it is requested for five or six in the same family,—evidence very sufficient of previous neglect.

Revaccination is often resorted to; I have watched its progress in a great many cases; and where satisfied of a previously efficient vaccination, have *never* seen it go through a regular progress, or in any way present a vesicle from which lymph ought to be taken. The conviction therefore presses itself upon me that there is no other use in revaccination than as a test of the regularity of the previous vesicle. In this respect it appears to me to be eminently useful, and by no means to be neglected where the slightest doubt is entertained. From what I have seen of revaccination, I should however be inclined to place no confidence in it as a test, unless there were present very sensible evidence of the specific virus being absorbed, as indicated by the formation of an irregular vesicle, attended by a certain degree of surrounding inflammation. It is too often the practice to insert from a glass into the arm a small quantity of the dried virus, and then, because no effect has followed, to proclaim that the patient resists the infection in consequence of the previous operation. Thus an imperfect attempt not only lulls into a false security, but, by its failure, throws undue discredit upon the protective power of vaccination.

It may not be inappropriate here to mention the numbers vaccinated at the Dispensary during the last few years. It will mark the confidence which the lower orders repose in it.

Years.	Numbers vaccinated.
1834,	614
1835,	525
1836,	430
1837,	461
1838,	510
1839,	515
1840,	502
1841, at the time of writing this account, (October,)	496

Chicken-pox, &c.—It was mentioned above that these affections were often mistaken and called secondary small-pox; this happened in 1839, when a great number of these cases occurred. They evidently however were not a modified small-pox; and in confirmation of it, during their prevalence there was no case, as far as I am aware, of true small-pox in the city. Nevertheless, it was currently reported that such and such persons had the small-pox, and that vaccination had failed to protect them.

Rheumatism, lumbago, gout, &c., though not infrequent disorders of the district, are yet by no means so prevalent as in many other places in the kingdom,—the number of cases forming about 4 per cent., or 1 in 24 of the whole registered diseases; while, in Penzance, they constitute 1 in 17.6; in Plymouth, 1 in 18.4; in London, 1 in 14.7; and in the north of England, 1 in 22.* It chiefly attacks adults and those advanced in years; the average age given by the tables is forty-three. The cases which occur consist chiefly of subacute rheumatism, rheumatic gout, but more especially of chronic rheumatism. Acute rheumatism, though occasion-

* *British and Foreign Medical Review*, vol. vi., p. 14.

ally, is yet rarely met with. Though the various forms of this disorder may be met with during every period of the year, yet the months of March, April, May, and June, constitute the season in which it chiefly prevails; while, during the autumn, it is evidently upon the decrease. In the March and April of 1833, a number of cases of rheumatic fever took place. March of this year was unusually cold and dry, with rather a low range of the barometer; April was cold and wet. Climate however does not appear to exert so great an influence upon these affections as is generally thought to be the case; at least such to a certain extent may be inferred from the fact of its not being so frequent here as in the north of England, nor so frequent in the north of England as in the milder climates of Plymouth and Penzance.

Rheumatic affections, though often distorting and preventing free action of the joints, are not generally dangerous in their effects, excepting in those cases where metastasis to the heart takes place. Though this is not very frequent, yet I believe it to be one of the most prolific sources of disease in this organ in the district. The usual treatment resorted to, with varying success, is the exhibition of colchicum, Dover's powder, guaiacum, and the hydriodate of potass; in some cases of old standing I have seen the *oleum jecinoris aselli* of service. Externally, much benefit is often derived from the use of moist stimulating poultices.

Dropsy is in this district more frequent than appears to be the case in many other places; it forms

$3\frac{1}{2}$ per cent., or 1 in 28 of the whole diseases. How far this prevalence is owing to the moisture of the climate is difficult to determine. It is however a common belief that dropsies are most frequent in places where the atmosphere is very generally charged with moisture,—a condition certainly which obtains here. It is supposed that a climate of this character tends to suppress the cutaneous perspiration, by which means the blood is retarded in the veins, thus causing a preternatural fulness of the blood vessels; hence, (assuming the view to be correct that such a state of the system is the chief cause of the passive dropsies,) upon any defect arising in the compensating functions of the kidneys or other excretories of water, a dropsy will probably ensue. The cases of dropsy which constitute the greater proportion in this report are anasarca, and occur for the most part in persons whose constitutions are broken down by other diseases, or in old persons attacked by inflammatory disorders. In young persons it is sometimes caused by the disturbed state of the constitution, consequent upon uterine derangements. Generally speaking, the number of cases is much the same at all periods of the year; to a certain extent however it may be said that more cases occur in April, and fewer in September, than at any other periods.

In an able summary of the reports of diseases from several towns, in the sixth volume of the *British and Foreign Medical Review*, it is remarked that the proportional occurrence of dropsy in any district furnishes a fair index of its morality,—that is to say, that dropsy indicates the prevalence of intoxication,

and of spirit drinking especially. As far as this district is concerned, such an inference can by no means be drawn; for the inhabitants of Exeter cannot be said to be peculiarly addicted to intoxication, and most certainly not to the indiscriminate and free use of ardent spirits. As a proof that dropsy does not owe its origin to this source here, it is comparatively rare to find it in connection with the nutmeg liver. I am more inclined to consider a great amount of the dropsy of this place is owing to general deprivation, so constant amongst the poor of large cities, and to the want of sufficient clothing and care on exposure to climate after sickness.

Dropsy, with a coagulable state of the urine, is also not rare; at the public institutions of this city there are usually two or three cases under treatment. Cases both of diabetes mellitus and insipidus are by no means uncommon. Every case of true diabetes that has come under my observation here has terminated in tubercular consumption. This has been so uniformly the case, that the conviction forces itself upon me that it is essentially a symptom of scrofulous disease, and that the kidney is made to be an emunctory of these matters, otherwise colliquatively discharged by the skin.

Scrofula itself is also more frequent than in the midland counties; it constitutes in this district 1 in 54 of the whole number of cases,—that is to say, nearly 2 per cent. During the incipient period of this affection I have observed a great liability to cold and slight feverishness, the slightest causes appearing to excite inflammatory action to the mucous

membranes. It may however generally be said that scrofula in this district presents itself under no peculiar form; every variety of this affection is at times met with. In the treatment, mercury, as far as my own observation goes, is injurious; it appears to irritate the symptoms, and if there be ulcerated surfaces, to aggravate and extend them. Much benefit is derived both by the internal and external exhibition of the several preparations of iodine. The absorbent effects which the ioduret of lead possesses in the case of enlarged glands has struck me to be very remarkable. In children the lime water and burnt sponge are frequently given with the utmost service.

Amongst the cases of scrofula a few of *noli me tangere* are recorded. A medical friend tells me he has found great benefit in these cases from the use of the ammoniated copper. From my own experience, I can say nothing of this medicine in these cases.

Scirrhus occurs in about the usual average, i.e., about 1 in 244. How far this affection is curable by the aid of medicine is generally esteemed doubtful. I am myself convinced however that in the early stages of true scirrhus of the mamma, success may attend its exhibition. In more than one instance it has appeared to me that it has been subdued by the assiduous exhibition of iodine, both internally and externally.

A case of *cheloid disease* has for some years past presented itself to my observation. It has however,

as far as permanent cure is concerned, proved entirely refractory; all that I have been able to do has been to quiet symptoms as they have arisen, and to arrest its destructive course. The case, which is now of some years' standing, originated in a blow upon the right mamma. The disease first showed itself by slight swelling, and then in ordinary superficial abscess, about the size of a nut: afterwards small nodules arose, from which shortly there exuded a thin ichorous fluid. On these surfaces healing, the characteristic cicatrices were formed. This process has gone on from time to time, until now the whole structure of the breast appears to be annihilated; moreover, the disease has extended itself over a considerable portion of the chest and shoulder. Within the last few months much pain has been felt in the arm, which is greatly swollen from œdema. The arm now presents the appearances usual on an aggravated and protracted scirrhus breast.

Affections of the brain and nerves are by no means numerous, not 1 in 20. Those that do occur are of the usual kinds. *Apoplexy* for the most part takes place in the robust and aged only; I have observed that cases of this nature occur so frequently on the boisterous changes of the equinox, as also on a cold north-easterly wind suddenly setting in upon previous mild weather, that I am induced to think apoplexy is considerably influenced by violent atmospheric changes. This may probably be accounted for on the grounds that during such periods the cutaneous perspirations are interfered with, thus

producing the internal congestion. Amongst the aged, paralytic attacks frequently take place without the least possible trace of apoplectic symptom. I have known several instances in which complete and permanent hemiplegia has been suddenly induced without the loss of cerebral power for a moment.

Epilepsy.—Many cases of this affection present themselves for treatment, some connected with catamenial derangement, some apparently with stomach affections, and others altogether idiopathic; all, during the affection, show evidence of turbulent action of the heart. The two former I have frequently found yield to remedies applicable to the primary affections; the latter, though more intractable, yet has in many instances been much benefited, and in some few entirely relieved, by a sustained exhibition of the valerian and hydrocyanic acid, together with the daily use of some slight tonic aperient, as rhubarb combined with soda. The effects of this treatment have been so striking in several instances, that I cannot but think them particularly valuable in this complaint.

Of *catelepsy* I have had the opportunity of seeing but two cases only; these however were very marked,—the one in a male, the other in a female. *Chorea* I am disposed to think but a rare affection here; it usually occurs before the age of puberty. The exhibition of the carbonate of iron, together with a well sustained but mild purgation, has appeared the most satisfactory treatment.

Of *hydrophobia* one case, of *tetanus* two, and of *trismus* two, are all that I have seen of these affections. The symptoms of hydrophobia did not show themselves until six weeks after the bite of the dog; but after a few days' illness the disease proved fatal. The appearances on dissection were an inflamed condition of the mucous coats of the stomach. One case of tetanus occurred during the excessive heat of a very hot summer, and was seemingly caused by the irritating effects of mercury, taken to profuse salivation for a syphilitic attack; the patient died. The other case was an accident, a nail having penetrated the sole of the foot; the patient also died. The trismus was caused in one case, a female, by inanition after confinement; she recovered by judicious feeding and the careful exhibition of stimulants and sedatives. The other occurred in consequence of extreme vexation, and, though alarming in its character, yet eventually did well; this patient stated that he had suffered an attack previously, which was caused by having, in mistake, had administered to him a large dose of hydrocyanic acid.

Delirium tremens is very rare; only occasionally a case is met with. The lower orders are peculiarly free from it.

Suicide, comparatively speaking, is rare also. In the ten years there were but seventeen cases. No particular mode of self destruction appears to have been adopted. Drowning, hanging, and cutting the throat, were indiscriminately resorted to.

Diseases of the heart and great vessels present in their features nothing very remarkable; they occur in about the usual average. As previously mentioned, many of the affections of the heart are referable to metastasis from rheumatism.

Diseases of the lungs.—Seventeen per cent. of the whole diseases, or 1 in 6, are complaints of the lungs. Of these a large proportion consist of simple inflammation of the bronchial vessels. The symptoms of this inflammation are usually more of a feverish cold, with coryza; generally speaking it is not obstinate, and yields to mild treatment, excepting in persons advanced in years. Chronic catarrh, however, amongst the lower orders, is by no means uncommon; while amongst the upper classes it is comparatively rare. Bronchitis for the most part prevails during the winter and spring months; it would seem that the frequent source of this disease was exposure to cold in the damp which prevails at these seasons.

The amount in the number reported of these affections is greatly added to from its including the cases of influenza which during the period was epidemic there several times during the period of these reports. Whether influenza belongs to this head, or should have been arranged amongst fevers with local determinations, may be a question. Popular feeling could certainly place it amongst catarrhal affections; while perhaps some pathologists might be inclined to rank it as a specific fever. Be this as it may, it has raged here epidemically several times,—in the year 1831 to a considerable

extent; in 1833 and 34, many cases occurred; but in 1837 its occurrence was more especially marked by the numbers attacked, and the severity of its symptoms. It appeared in each case to travel from east to west. The first cases that occurred were in the second week of January, and continued during the following six weeks. In the first ten days occasional cases only occurred; but on the 18th, 19th, 20th, and 21st of this month, it was a most prevailing epidemic. The more usual symptoms were, first, oppressive pains of the head, especially over the region of the frontal sinus; diffused muscular pains of the shoulders, loins, and legs; constant sneezing, early followed by a very copious flow of a thin acrid discharge, chiefly from the membrane of the nose. (The membrane of the eyes was not so greatly affected as in the influenzas of 1831 and 1834.) *Secondly,* these symptoms were quickly followed by an overwhelming feeling of lassitude and prostration of strength, with, in many cases, a loss of all muscular power, together with great anxiety of the præcordia, and agonizing fears of impending death; a sensation of painful rawness of the fauces and trachœa, a voice hoarse and hollow; frequent short cough, for the most part dry; stricture and acute lancinating pains of the chest; by the stethoscope there were heard rales, sonorous and sibilous, and almost always in some portion or other of the thorax, generally the lower, well marked crepitation; tongue coated with a copious white mucus, excepting at the top and edges, where the papillæ were inflamed and elevated; bowels not confined, and easily acted on by

aperients; in fact there was rather a tendency than otherwise to diarrhœa; appetite gone; occasional thirst; pulse small, quick, but soft; paroxysm generally severe during the night. At this stage of the disease I was sensible of the existence of a peculiar and very characteristic odour proceeding from those affected. Though not able properly to describe it, I may state its general character to have been that of a sour musty smell. *Thirdly*, about the fifth or sixth day a mucous discharge from the nose came on, together with a muco-purulent expectoration or coughing. The various symptoms now gradually declined, leaving the patients in a state of great general weakness, together with a peculiar aching feel and loss of power in the muscles of the leg. Such may be considered as a hasty sketch of the nature of the disease; it spared neither age, sex, occupation, nor condition of life; all appeared liable without any discrimination to its attack, though it was certainly both more severe and fatal in its consequences in children and old persons, especially if these latter were affected with pulmonary disease generally, or, in fact, chronic disease of any kind. Those children appeared to suffer the most severely who had laboured under hooping cough, or some of the eruptive infantile fevers which had prevailed to a great extent during the preceding November and December. Relapses were not unusual; in some cases they were very severe, though in all these the symptoms were much modified. Nor were persons who had suffered from the epidemic in previous years any way exempted; on the contrary, they appeared more susceptible of its

influence. After an attack had subsided, convalescence, in those who were strong and healthy, was generally quickly established; while in others symptoms of general lassitude, referable to an attack of this epidemic, lasted for weeks or even months; in fact, in some cases, to the present day its effects have not been recovered from. In those with a predisposition to phthisis, it frequently aroused the disease into action. It appeared to me in many cases to leave something like a chronic inflammation of the stomach; certainly many became dyspeptic after it, and found that various articles of diet which had been previously innocuous now produced such irritation as to preclude their further employment.

Much has been said with regard to the contagiousness of this disease; and though many facts came under my own observation which bear strongly in favour of such a view, yet, from the general prevalence of the epidemic, any such conclusion cannot be assumed.

With regard to its prevalence, and the consequent mortality, some notion may be entertained from the following facts. The number of persons admitted to the Dispensary during the months of January and February, of 1837, were three hundred and thirty-nine; of these, two hundred and twenty-three were admitted for influenza, or else attacked during the time they were patients. The number of patients admitted during the two first months of the previous year was two hundred and thirty-six,—thus showing an increase of admissions during the prevalence of this epidemic of one hundred and three patients.

The registers of the two large burying grounds of the city in January and February, 1836, gave the number buried as one hundred and twenty-five; while in the corresponding months in 1837 they amounted to two hundred and twenty-seven, thus giving an increase of upwards of one hundred deaths.

The mode of treatment which I found most applicable was the exhibition of the milder diaphoritics and carminatives with diluent diet. In no case did depleting or severe purging hold out encouragement for a continuance in such means.

Asthma, though occasionally met with, may yet be considered as a rare disease. Those cases which do occur are usually in old people, and so complicated with the more permanent sources of dyspnœa, that they scarcely deserve the name. Now and then however a case of uncomplicated asthma may be met with.

Croup is at times frequent; it appears usually epidemically, a long period often intervening between the occurrence of cases, and then several are met with. 1825, 1827, and 1831, were years in which it was particularly prevalent.

Laryngismus stridulus also occasionally occurs; the cases which I have had an opportunity of seeing have been invariably in children of parents highly scrofulous. The treatment which has appeared to me the most satisfactory has been during the spasm

to dash cold water on the face and chest, and during the intervals to give soda and rhubarb in alterative doses.

Hooping cough occurs only epidemically; though generally mild, yet at times it assumes a character of great severity. This was particularly the case towards the latter end of 1833 and the beginning of 1834. A large proportion of the children so afflicted spat up blood in the efforts of coughing; some died during the attack; and many lingered on with organic affections of the chest, thus aroused into action.

Phthisis pulmonalis forms a large proportion of the diseases of the chest of this district; it occurs in all its various forms, though, most usually, the cases are protracted and lingering. It has appeared to me, from a careful examination of many of those predisposed to the affection, that the stage antecedent to the condition of decided disorder is characterized by a general sound, heard throughout the chest, resembling, to a certain extent, the noise heard on putting a shell to the ear; this takes the place of the vesicular murmur. During cough, the bronchial respiration is heard, as if the chest opened widely, followed by a sonorous vesicular respiration. The voice reverberates immediately beneath the stethoscope, but not so loudly as to be called a bronchophony; on percussion, the sound is not strikingly affected. The heart's action sounds heavily over the right side; the pulse are increased in number, small, and divided in their beat; besides

this, the patient becomes thin, expresses himself as weak, his legs soon getting tired; he complains generally of being easily wearied; appetite impaired; perspires on the slightest exertion and in bed; anxious in his manner, and easily excited; together with a short cough and, may be, the occasional expectoration of a little blood. At times also slight pains are felt on the surface of the chest,—pains such as may be called those of a bastard rheumatism. So frequently have I seen this state of things, not only in those who from circumstances I have known to be predisposed to tubercular development, but in those by whom it has been followed by the disease itself, that I no longer hesitate to view such collection of symptoms as the early *but curable* stage of phthisis, and consequently deem it worthy of every attention, in order to arrest the threatened evil; and I feel satisfied that in very many cases results the most satisfactory have attended my efforts. The treatment usually pursued has been the constant exhibition of a modification of Lugol's solution of iodine, the free application of mustard poultices to the chest, and the occasional use of digitalis, diluted sulphuric acid, superacetate of lead, hyoscyamus, and soothing cough medicines, &c., as occasion may require. Under the action of the iodine it is remarkable how quickly the pulse is brought down, *without* being depressed, the patient at the same time gaining rapidly in flesh.

Amongst the cases of phthisis, a few were instances of pure phthisis laryngea. In these no very marked symptoms of any affection in the lungs were observable. On examination after

death however, the lungs were invariably found much impacted by tubercular deposit. A few cases have also occurred of phthisis, complicated with syphilis. In these the alternations of disease were quite remarkable: at times the chest complaint would appear to be entirely suppressed, while syphilis, in its various forms of periostitis and ulceration, was rapidly progressing; then, on these subsiding, the more fatal affection would develop itself; eventually they died of consumption, in which both the perspirations and expectorations were peculiarly offensive. Three cases of mental delusion, in connexion with consumption, and after free salivation by mercury, have occurred to my observation, with so much singular coincidence, that I am induced not only to refer to them here, but to style them phthisis, complicated with mercurial irritation. In each the patients presented the usual character of the incipient stage of phthisis; but superadded to this was an impression that their whole system was impregnated with mercury, which in two cases had been taken for syphilitic affection, and in the third for an accidental attack of swelled testicle. So strongly rooted was this impression that they maintained they smelled it in their perspirations, tasted it in their saliva, were convinced it was in their secretions, and that to this, and this only, were attributable the unpleasantness of the symptoms they were labouring under. This state of things in each occurred until the symptoms of phthisis became fully developed, which usually they did suddenly; then the delusion subsided, and the patient went through the ordinary course of a very rapid decline.

Pneumonia is by no means frequent, unless complicated with other affections of the chest, and apparently consequent upon them. Gangrene of the substance of the lung is only occasionally met with. Pleuritis is more frequent and I believe exists to a greater extent than is usually believed; I am led to this conclusion from often observing in *post mortem* examinations adhesions of old standing, the origin of which has never been referred to by the patient, and which, from the patient's general condition, were not expected. Occasionally, though rarely, cases of empyema are met with.

Debility.—Under this head may be classed numerous cases presenting themselves for relief, which, though much inconvenienced by general ailment, are characterised by no very obvious disease. Generally speaking, these persons are strongly tainted with the tuberculous constitution, but are free from any direct development of tubercle itself. Their symptoms are usually a complication of both mental and bodily inaptitude, and though not complaining of a state of stomach to which the term indigestion may be applied, yet this organ does not bear overloading, and evinces a condition of much general weakness. These cases are much benefited by acids and weak bitters.

Diseases of the abdomen form a considerable portion of the illness of the district. They amount, exclusively of worms and diabetes, to $14\frac{1}{4}$ per cent. of the whole. The most frequent affections are diarrhœa and dyspepsia; inflammatory diseases, comparatively speaking, are, not very prevalent.

Dysentery is of rare occurrence; in fact, it may be said to be a disease not proper to the district: cases are only met with towards the close of a hot season, and then but very seldom. In August and September of 1825, and also in 1831, a few persons were attacked. At each of these times it was epidemic, but not a very widely prevailing one. The cases were ushered in by fever, were very painful and obstinate, but usually did well. As far as I am aware chronic dysentery never supervened as a consequence. The patients were for the most part permanently cured. The treatment which was adopted, and with the most perfect success, was the exhibition of blue pill and opium, together with a purging mixture of castor oil and tincture of henbane.

Diarrhœa is one of the very prevailing diseases of the district, especially amongst children. Its characteristic is usually either the bilious or mucous, and requires the ordinary treatment recommended in these forms. In children it is sometimes very obstinate, and appears determinately to resist the more common remedies. In these cases, the lime water combined with milk is often found to be of the greatest service. During the autumnal months diarrhœa often passes into the English cholera. This rarely occurs until after the stone fruits are fully ripened. In 1828 it prevailed to a great extent; in fact, was a very wide spreading and fatal epidemic. It commenced by a purging, immediately succeeded by vomiting. The evacuations were forcibly expelled, and without any exertion on the

part of the patient. During this first period of the epidemic severe griping pains were felt, then came on general depression, weak pulse, and all the symptoms of collapse, cramps in the legs, sunken countenance, thirst, together with a continuance of the vomiting and alvine discharges—these to such an extent as to be really most remarkable. If these symptoms were not capable of being controlled, about the third or fourth day the patients most usually succumbed to their influence. The treatment which appeared followed by the most satisfactory results was in some cases the exhibition of effervescing saline draughts, with blue pill and opium; in others, lime water and milk.

The great visitation of Asiatic cholera took place in 1832. The first case that occurred was on the 19th of July. It was at that time prevailing both in London and Plymouth; and it is not a little remarkable, that the first case which occurred was in the person of a man who had in the previous twenty-four hours travelled from London; while the second case, which occurred on the following day (on the 20th), in a totally different part of the town, was in the person of a female who had come three days previously from Plymouth. On the third day the disease showed itself at very widely different points, and before four days were completed it was a general epidemic.

At the first blush of this statement it would appear that a strong inference might be drawn from it in favour of the contagiousness of this disease. I am inclined to think however that the occurrence of these cases is open to different explanations.

Both these persons may have been affected with the peculiar poison of cholera previously to setting out upon their journeys, and on coming into a district in which the epidemic poison was commencing to exert its influence, may have been liable to the full development of its power earlier than those living quietly within the district, or they may even have not been infected previously, yet may have been rendered more susceptible by coming into the midst of it while under the debilitating influence of a long journey.

As an argument against its contagiousness, it may be mentioned that several neighbouring towns, with which the communication was most frequent and unrestricted, escaped, comparatively speaking, from its attacks. We may specify Topsham, four miles and a half from Exeter, Crediton eight miles, and Dawlish twelve. In these towns perhaps one or two cases only occurred.

The history of its occurrence here was much the same as described elsewhere. The symptoms were in no ways different from what had been observed generally in other localities. The treatment was various and attended by the same results—that is to say, on its first occurrence it baffled all attempts at cure, while latterly every one thought that in their own mode of practice they had found a specific. This was so strongly marked here, that, to me, it fully explains why some have so confidently lauded their own *methodus curandi,* and affirmed results from it most universally satisfactory, which mode has been found by those who may have tested it in some distant place to have been as dishearten-

ingly inefficient. In fact, the nature of the disease was very different on its first breaking out to what it became subsequently. At first it was characterized by the most intense and fatal virulence, while latterly the cases, if even left to themselves, did well.

In Exeter it continued very fatal in its attacks for the first three weeks, and then gradually subsided. It lasted altogether about six weeks, a few cases only after this time appearing. As an epidemic it may be said to have ceased by the 1st of September. During its continuance more than four hundred fell victims to its ravages. In the following year (1833), during September and October, it again occurred, but by no means to the same extent. As a remarkable fact it may be mentioned that during this second slighter epidemic it occurred to a very great extent amongst lunatics, a class of persons who had not particularly suffered in the previous more severe visitation. As far as I am aware no examinations after death took place.

Gastritis in its acute form is very rare; as a chronic disease it is more frequently met with. It presents nothing remarkable in its character.

Peritonitis of late years has been very rare, unless when occurring in the puerperal state. In 1827 it was very frequent; in fact, the great mass of diseases which occurred about that time were acute inflammations of the serous membranes; since then however they have been comparatively rare. They formed a class of diseases which called for

the most prompt treatment, and bore with singularly good effect large bleedings, both local and general; in fact, *venæ sectio,* together with calomel and opium, appeared to be the only sheet anchor. As an illustration of the singular tendency of family predisposition, the following may be cursorily alluded to:—In company with my friend, Mr. Webb, I visited a young man in 1833, who was labouring under peritonitis; after an illness of ten days he died. A *post mortem* examination exhibited the peritoneum in a state of high inflammation, covered by copious effusion of puriform lymph, and with which the folds of the intestines were agglutinated together. Two years subsequently to this I again visited, in company with Mr. Webb, a brother of the former, aged 22, under similar circumstances, and with the like result. On the *post mortem* examination, so like were the appearances that a drawing of the one would most accurately have described the appearances noticed in the other. We were also given to understand that in a different part of the county another brother had died only a few months previously with symptoms exactly similar; no *post mortem* examination was made. Each of these cases of peritonitis occurred at a time when the disease was by no means prevalent, so that its occurrence must be entirely attributed to family predisposition.

The lead colic, or, as it has been called, the Devonshire colic, is now no longer prevalent, excepting occasionally in painters or those who may accidentally be subject to the influence of lead. Since

the time Sir George Baker showed that the prevalence of this disease in Devonshire was owing to the employment of leaden vessels in the process of making cider, which was then the custom throughout the county, these have been abandoned, and with the cause the disease has subsided. Devonshire now no longer particularly deserves to give its name to this affection of the bowels.

Dyspepsia prevails to a considerable extent. Bad diet and the anxiety of mind consequent upon poverty, are prolific sources of this affection amongst the poor. It appears often referable to the quantity of hot drinks, in the shape of weak broths, tea, &c., which they consume, and by which the tone of the stomach generally is materially impaired. In the lower orders the want of a proper diet is as injurious as the abuse of abundance amongst their wealthier neighbours. The free indulgence in cider and deficiency in clothing, especially during the night, are also at times causes of this affection. The form which it usually assumes is that of a gnawing pain in the region of the stomach, palpitation of the heart, and the eructation of flatus, and occasionally of a small quantity of acrid fluid; the more copious flow of gastrorrhœa is less frequent. The treatment which I have generally found most useful has been the exhibition of mild tonics, as the trisnitrate of bismuth, with soda, combined with a little rhubarb; if the pain be excessive, the addition of two grains or so of Dover's powder has appeared useful. This, taken every six hours, very commonly proves serviceable. At other times, the bitter infusions, with soda, the nitrate of silver, or

lime water, have been of use. However we may administer medicines, in very many cases, the insufficiency of an adequate diet prevents satisfactory recovery.

The seasons of the year in which dyspepsia prevails to the greatest extent are spring and summer; by far the largest proportion of cases takes place in the month of May. Generally speaking, the persons affected are about the meridian of life; forty-one is the average age. Females appear affected by it in a much larger proportion than the males.

We usually refer dyspepsia to a diseased condition of the functions of the stomach, or to disease of this organ itself, and, to a great extent, such views appear to be correct; but at the same time I am inclined to think that affections, both functional and local, in the pancreas, are sources of this distressing complaint. It is remarkable how little the disorders of this viscus are recognised; and yet what an important part it performs in the phenomena of digestion.

Cases of pure gastrorrhœa are now and then met with. In some the quantity of fluid voided has been immense; but these cases have invariably occurred in females in whom there was some considerable and very prominent uterine irritation. I have seldom seen in these cases the employment of acids or of astringent bitters useful; on the contrary they rather appeared to aggravate the symptoms. The medicines most applicable were saline draughts in effervescence with an excess of alkali, or the liberal and long continued use of *James's* powder, &c. Sedatives also appeared to be occasionally useful.

Stricture of the œsophagus is sometimes though not often met with ; in 1833 several cases occurred. In two cases which I had the opportunity of examining after death, the disease appeared to consist of an hypertrophy of the submucous tissue, consequent upon inflammation. Both these cases were referred in their origin to attacks of influenza in 1831.

Aphthous sores of the mouth and tongue are by no means infrequent,—most often in complication with other diseases, though sometimes they occur idiopathically ; in either case they are very troublesome. They usually commence in a small vesicle, which, breaking, permits the exudation of a little fluid. After this there is left an abraded surface, which, if not attended to, becomes an ulcer, usually as obstinate as it is painful. The old remedy of borax and honey is very serviceable before the ulcered surface is established ; after that it appears of no use. The ulcers are most easily cured by a weak solution of lunar caustic, or, what is even better, a weak ointment of the nitric oxid of mercury. At the same time that this local treatment is adopted, the exhibition of a solution of Epsom salts in the compound infusion of roses is resorted to with advantage.

Diseases of the liver are by no means common ; acute inflammation is in fact a very rare disease. Occasionally cases of chronic affection, jaundice, &c., present themselves. Bilious diarrhœa and slight sympathetic functional disorders of this viscus are certainly not infrequent ; but what is generally

understood by the term "liver disease" is not common. I believe however that derangement in this organ is often excited by the too indiscriminate use of mercury; this is especially the case in the little illnesses of children. This medicine is given to such an extent that the liver becomes over-excited by it, and consequently pours out vitiated secretions, which are then produced as evidence of diseased liver, and therefore of the further necessity of the free use of mercurials. I have so often witnessed this error that I am convinced it prevails to a considerable extent.

It may not be inapposite to mention here a case which appears to me of much interest. A. B. had long been jaundiced; suffered pain on the right side on pressure, where was evidently a fulness and hardness. He occasionally suffered all the symptoms of the passing of gall-stones; a few days after which there could be discovered in the fœces small dark-coloured matters, not unlike caraway seeds. At the examination after death the gall-bladder was seen involved in a mass of scirrhus. The common biliary duct was scarcely pervious enough to admit an ordinary sized pin. The liver itself was large and hard; internally it was gorged with bile, and here and there could be picked out the small caraway-seed-looking particles. These were, without doubt, moulds of the secreting surface of the liver, and apparently consisted of inspissated bile. They are evidently entitled to be called "calculi of the liver." They are about the tenth of an inch in length, and one-sixteenth in width, slightly curved, and kidney shaped, very light, ten weighing only

one grain; their surfaces are covered over with ridge-like reticulations. I am not aware that any such matters have been previously described.

Diseases of the urinary organs are not very frequent affections, excepting towards the latter periods of life, when chronic diseases of the bladder, urethra, &c., are by no means uncommonly met with. During the middle period of life the affections of the urinary system consist for the most part of inflammatory disorders of the kidney, giving rise to albuminous urine and functional disease, characterised by an undue secretion of lithic acid, so that the urine deposits granules of the lithate of ammonia; this affection sometimes proves sufficiently obstinate and inconvenient. The triple phosphate is also not an unusual deposit. These functional disorders have appeared to me to be far more frequent on the calcareous district than on that of the clay slate; most certainly the greatest proportion of cases I have had an opportunity of seeing have been in persons inhabiting the red sandstone country.

Calculus of the bladder is an affection comparatively rare here.

Uterine diseases occur in nearly the average proportions, forming about 4 per cent. of the whole number of cases, or 1 in 24. The months of April, May, June, July, and August, are those in which affections of this system occur the most frequently. They consist chiefly of chlorosis and amenorrhœa, and menorrhagia and fluor albus; these latter are chiefly prevalent about the age of thirty and up-

wards, while the former are more usually the disorders of twenty-five and under. Dysmenorrhœa is by no means infrequent, but is usually complicated with the others, though sometimes it appears as an idiopathic affection.

Hysteria, Proteus like, assumes here its various anomalous forms, and is equally troublesome of cure as in other places. A very deceiving and tedious affection of this nature, of which several cases have presented themselves, is a complication, with pectoral irritation. They are characterized by an almost incessant dry hacking cough, which no medicines, administered directly for its allaying, appear capable of subduing. The pulse is quick, the skin dry, the countenance anxious, the nights sleepless. The uterine condition usually attendant on this state is that of menorrhagia; though cases occur with the opposite condition of an amenorrhœa. This state of things will continue sometimes for years in spite of every endeavour to relieve it; it is however considerably alleviated and sometimes cured by the exhibition of the warm gums and tonics, as myrrh, iron, acids, &c. Opiates have never appeared to me to give the least relief.

Puerperal fever occasionally occurs, but not very frequently. It may be said, comparatively speaking, not to be a common disease. In 1825 and in 1830 several cases occurred; latterly however but an occasional case only has been met with. In August of this year (1841), a few cases occurred, but they were confined to a very small district of the city.

Bronchocele.—Cases of this disease now and then offer themselves for observation. The character of the tumour is rarely hard and fleshy, but usually soft, with evident fluctuation, especially if it have amounted to any size. I have most frequently found it ameliorated, if not entirely cured, by the repeated application of leeches and the internal administration of iodine. It usually occurs in the leuco-phlegmatic constitution. Amongst the cases recorded, one only is a male.

Worms are a common disorder, though not so according to the Dispensary reports. This is easily accounted for: the poor do not apply for relief unless the concomitant symptoms become urgent. The lumbrici and ascarides are the most frequent varieties. Amongst ill-fed adults the short-jointed tape worm is a common entozoon. Against this last, I have found the bark of the root of the pomegranate particularly serviceable. The formula I am in the habit of recommending is the following:— ℞ *Cort. radicis punicæ granati* ʒij, *aquæ* ℔ij., *macera per horas* xxiv., *decoque ad* ℔j., *adde syrupi zingiberis* ʒi. Two ounces of this to be taken every half hour until the worm is expelled. If the head become dizzy, which is not infrequent after the fourth or fifth dose, it should be discontinued. It is quite necessary that the above should be made of the bark of the root, and not of the rind of the fruit; this latter appears to be totally inert as a vermifuge.

Eruptive diseases form a considerable proportion

of the disorder of this district, amounting to one-seventh of the whole, or 1 in every 14. The most commonly met with are scabies, herpes, impetigo, psoriasis, lepra, eczema, prurigo, and acne.

Surgical affections, it will be seen by the tables, comprise a large proportion of the cases admitted: one-fourth of the whole. They consist of the usual affections of this nature; perhaps there may be a larger proportion of bad legs than may be common to other parts of the kingdom, in consequence of the practice of "kicking shins," adopted in the mode of wrestling in this county; with this slight observation I shall dismiss this subject, as not coming particularly under my observation.*

* In the Appendix will be found the distribution of these diseases in the different months in which they occurred. It may be interesting to compare such a view with that afforded by other districts.

APPENDIX.

Tables in which the 11,258 *cases are arranged in the different months in which they occurred.*

1.—FEVERS.

	No. adm	Ma.	Fm.	Av. age.
January	105	36	69	30
February	153	52	101	29
March	131	47	84	31
April	141	41	100	32
May	127	41	86	28
June	119	37	82	30
July	120	45	75	32
August	82	29	53	35
September	92	32	60	33
October	100	34	66	32
November	103	21	82	31
December	68	22	46	29
Total	1341	437	904	31

2.—ERUPTIVE FEVERS.

	No. adm	Ma.	Fm.	Av. age.
January	4	2	2	2
February	8	5	3	15
March	11	3	8	11
April	3	0	3	5
May	14	7	6	9
June	5	0	5	6
July	7	4	3	7
August	1	0	2	3
September	10	4	6	7
October	5	2	3	10
November	5	1	4	7
December	7	3	4	3
Total	80	31	49	7

3.—RHEUMATISM.

	No. adm	Ma.	Fm.	Av. age.
January	40	20	20	39
February	43	22	21	43
March	50	31	19	41
April	59	22	37	41
May	49	26	23	42
June	51	31	20	42
July	34	20	14	42
August	33	17	16	42
September	25	14	11	42
October	23	12	11	49
November	23	13	10	49
December	26	9	17	47
Total	456	237	219	43

4.—DROPSY.

	No. adm	Ma.	Fm.	Av. age.
January	39	14	25	49
February	37	15	22	50
March	29	10	19	54
April	43	15	28	56
May	37	13	24	51
June	36	10	26	47
July	35	9	26	54
August	35	12	23	57
September	24	9	15	42
October	34	12	22	47
November	32	14	18	46
December	21	10	11	40
Total	402	143	259	49

5.—SCROFULA.

	No. adm	Ma	Fm.	Av. age.
January	15	6	9	18
February	13	5	8	20
March	19	8	11	16
April	18	7	11	14
May	28	16	12	17
June	25	13	12	15
July	15	9	6	19
August	21	11	10	11
September	15	9	6	12
October	15	5	10	14
November	8	3	5	15
December	16	7	9	18
Total	208	99	109	15

6.—SCIRRHUS.

	No. adm	Ma.	Fm.	Av. age.
January	7	0	7	43
February	7	0	7	29
March	5	1	4	53
April	1	0	1	36
May	2	0	2	50
June	3	1	2	50
July	2	0	2	33
August	5	1	4	26
September	1	0	1	23
October	4	3	1	42
November	4	0	4	35
December	5	1	4	31
Total	46	7	39	37

7.—DISEASES OF BRAIN.

	No. adm	Ma.	Fm.	Av. age.
January	39	21	18	32
February	61	23	38	30
March	52	22	30	29
April	63	25	38	32
May	60	24	36	37
June	51	15	36	29
July	40	14	26	34
August	29	13	16	29
September	25	9	16	34
October	45	14	31	35
November	39	16	23	30
December	31	19	12	38
Total	535	215	320	32

8.—DISEASES OF HEART.

	No. adm	Ma.	Fm.	Av. age.
January	11	5	6	37
February	5	1	4	26
March	13	7	6	34
April	11	3	8	32
May	15	7	8	42
June	14	7	7	39
July	10	6	4	39
August	6	2	4	28
September	8	4	4	53
October	8	4	4	35
November	7	2	5	28
December	6	2	4	48
Total	114	50	64	36

9.—BRONCHITIS.

	No. adm	Ma.	Fm.	Av. age.
January	107	45	62	43
February	153	53	100	41
March	127	57	70	38
April	147	65	82	38
May	136	48	88	39
June	80	30	50	34
July	127	56	71	35
August	55	16	39	38
September	53	15	38	41
October	53	25	28	42
November	77	31	46	35
December	96	41	55	41
Total	1211	482	729	38

10.—PHTHISIS.

	No. adm	Ma.	Fm.	Av. age.
January	40	13	27	32
February	38	18	20	32
March	52	19	33	30
April	44	19	25	35
May	40	16	24	31
June	42	11	31	30
July	32	12	20	34
August	40	15	25	29
September	37	15	22	32
October	36	14	22	31
November	32	16	16	29
December	27	9	18	30
Total	460	177	283	31

11.—DEBILITY.

	No. adm	Ma.	Fm.	Av. age.
January	16	3	13	45
February.....	17	6	11	23
March	32	7	25	40
April	32	4	28	39
May	35	7	28	35
June.....	40	7	33	35
July	18	5	13	26
August.....	15	3	12	30
September	18	7	11	28
October	14	1	13	22
November	13	1	12	35
December	15	4	11	24
Total	265	55	210	31

12.—PNEUMONIA.

	No. adm	Ma.	Fm.	Av. age.
January	24	15	9	42
February.....	30	13	17	35
March	33	19	14	30
April	38	21	17	42
May	15	10	5	37
June.....	14	7	7	31
July	10	5	5	29
August.....	13	9	4	28
September	12	4	8	31
October	15	12	3	35
November	27	16	11	28
December	22	16	6	37
Total	253	147	106	33

13.—DIARRHŒA.

	No. adm	Ma.	Fm.	Av. age.
January	38	14	24	25
February.....	56	26	30	24
March	50	15	35	27
April	52	19	33	36
May	75	30	45	38
June.....	61	27	34	37
July	85	41	44	36
August.....	162	68	94	31
September	147	58	89	32
October	97	41	56	30
November	46	21	25	32
December	39	16	23	29
Total	908	376	532	31

14.—DYSPEPSIA.

	No. adm	Ma.	Fm.	Av. age.
January	48	14	34	43
February.....	36	13	23	42
March	55	14	41	42
April	62	22	40	45
May	72	24	48	41
June.....	54	17	37	39
July	50	14	36	36
August.....	53	21	32	43
September	46	14	32	43
October	45	9	36	38
November	41	12	29	47
December	34	12	22	43
Total	596	186	410	41

15.—DISEASES OF LIVER.

	No. adm	Ma.	Fm.	Av. age.
January	6	4	2	41
February.....	10	6	4	33
March	9	2	7	36
April	6	1	5	35
May	9	7	2	31
June.....	9	2	7	33
July	4	1	3	23
August.....	9	3	6	29
September	4	2	2	40
October	8	4	4	36
November	5	2	3	53
December	6	3	3	43
Total	85	37	48	36

16.—GASTRITIS.

	No. adm	Ma.	Fm.	Av. age.
January	6	2	4	39
February.....	3	2	1	37
March	4	0	4	30
April	9	2	7	31
May	4	1	3	33
June.....	4	1	3	35
July	3	2	1	41
August.....	1	0	1	37
September	1	1	0	67
October	2	0	2	27
November	3	0	3	44
December	3	1	2	31
Total	43	12	31	37

17.—FEMALE DISEASES.

	No. adm	Ma.	Fm.	Av. age.
January	...	0	37	27
February.....	...	0	38	30
March	...	0	37	30
April	...	0	51	28
May	...	0	42	32
June.....	...	0	48	36
July	...	0	48	34
August.....	...	0	43	32
September	...	0	22	32
October	...	0	28	29
November	...	0	36	31
December	...	0	27	28
Total	...	0	457	30

18.—ERUPTIONS.

	No. adm	Ma.	Fm.	Av. age.
January	69	26	43	24
February.....	81	37	44	22
March	74	23	51	28
April	78	28	50	23
May	89	29	60	27
June.....	74	29	45	27
July	72	32	40	25
August.....	43	16	27	33
September	44	18	26	38
October	68	29	39	33
November	66	27	39	26
December	51	29	22	33
Total	809	323	486	27

19.—DISEASES OF KIDNEY.

	No. adm	Ma.	Fm.	Av. age.
January	6	3	3	32
February.....	6	4	2	53
March	7	2	5	40
April	7	3	4	58
May	5	3	2	45
June.....	11	6	5	40
July	7	5	2	36
August.....	8	5	3	35
September	4	2	2	30
October	8	6	2	38
November	5	4	1	48
December	9	5	4	41
Total	83	48	35	41

20.—WORMS.

	No. adm	Ma.	Fm.	Av. age.
January	3	1	2	26
February.....	1	1	0	36
March	5	2	3	10
April	2	1	1	17
May	4	1	3	20
June.....	2	0	2	5
July	6	2	4	9
August.....	2	0	2	7
September	2	1	1	4
October	1	1	0	14
November	4	2	2	18
December	2	2	0	10
Total	34	14	20	14

21.—BRONCHOCELE.

	No. adm	Ma.	Fm.	Av. age
January	6	0	6	28
February.....	1	0	1	35
March	5	0	5	22
April	2	1	1	30
May	1	0	1	28
June.....	1	0	1	24
July	3	0	3	19
August.....	6	0	6	33
September	4	0	4	21
October	4	0	4	38
November	1	0	1	35
December	2	0	2	49
Total	39	1	38	30

22.—SURGICAL

	No. adm	Ma.	Fm.	Av. age.
January	203	99	104	35
February.....	204	111	93	32
March	241	125	116	31
April	272	132	140	34
May	227	128	99	31
June.....	247	137	110	32
July	240	125	115	33
August.....	221	105	116	33
September	267	130	137	35
October	256	126	130	33
November	247	133	114	32
December	208	107	101	30
Total	2833	1458	1375	32

ARTICLE III.

OBSERVATIONS

ON

THE CLIMATE OF HEREFORDSHIRE

COMPARED WITH THAT OF

THE NEIGHBOURHOOD OF LONDON,

WITH METEOROLOGICAL TABLES, &c.

BY LIEUTENANT-COLONEL PHILIP YORKE.

The works of Howard* and Daniell† have given so full a history of the climate of London, that they enable those who may attempt to treat of the local climate of any other part of the country, to discuss it with reference to that of London and its vicinity as a standard. With this view the following remarks and tables are intended as a contribution towards effecting a comparison between the climates of Herefordshire and that of the neighbourhood of London. The observations made in Herefordshire were carried on for four years, viz., 1836–7–8–9; and the registers of the Royal and Horticultural

* *The Climate of London, &c.*, by Luke Howard, 3 vols. 8vo., second edition, 1833.

† *Meteorological Essays and Observations*, by J. F. Daniell, 1 vol. 8vo., p. 263.

Societies afforded the necessary means of comparison with cotemporaneous observations made in London and its vicinity.

STATIONS AND INSTRUMENTS.

The observations published by order of the Council of the Royal Society are made at the apartments of the Society at Somerset House: latitude, 51°31′, north; longitude, 0°6′, west. The barometer, used since January, 1837, is described by Mr. Baily;* the cistern has been ascertained, by levelling, to be ninety-seven feet above the mean level of the sea. The register thermometers are on Rutherford's construction. The temperatures obtained here are however influenced by their situation in a large town; and the amount of rain, as shown by the rain gauge, is influenced by the height of the gauge above the ground, or other local circumstance.

The registers of the Horticultural Society are kept at the Society's garden at Chiswick, six miles to the west-south-west of Somerset House; the cistern of the barometer is said to be about fourteen feet above mean level of high water in the Thames at Chiswick. The thermometers are placed under a kind of umbrella, which was originally, I believe, of painted canvas, but now of wood; the maximum temperature appears to be considerably influenced by the thermometer being placed near this kind of roof, on which the sun's rays directly impinge.

The station in Herefordshire was at Lincoln Hill, about a mile to the south of Ross: latitude, 51°54′,

* *Philosophical Transactions*, 1837.

north; longitude, 2°35′, west. The barometer used was of the same construction, (except that it has one tube only,) and by the same maker as that belonging to the Royal Society; its cistern was ascertained by a trigonometrical measurement to be ninety feet above the river Wye. The thermometers (Rutherford's registers) were placed under a verandah facing the north, about five feet from the ground, and about a foot from the wall; they were supported on a cubical frame of wood, turning on a vertical spindle, and screened from the wall by a board, which was not in contact with the wall. The rain gauge used was of the construction described by Professor Phillips in the second volume of the *Reports of the British Association*.*

The first four tables are the abstracts of the registers for four years, and give for each month the mean pressure at nine, *a.m.*, and three, *p.m.*; the mean temperature of the air at nine, *a.m.*, and three, *p.m.*, the mean maximum and minimum, as well as the mean of the month, and the quantity of rain, at Somerset House and at Ross. They also show the mean temperature and quantity of rain at Chiswick and Ross, with the differences.

The heights of the mercurial column in the barometer are corrected for the temperature of the mercury and brass scale, and for the capillarity of the tube; the correction used for the last named cause in the barometer is = .003. The heights assigned to the mercury in the flint glass of the Royal Society's barometer are those used as a standard of comparison.

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	1836.	Barometer. At 9, a. m.	Barometer. At 3, p. m.	Temperature of air. At 9, a. m.	Temperature of air. At 3, p. m.	Mn. max.	Mn. min.	Mean.	At Chiswick and Lin. Hill. Mean.	Rain, inches.	
January.	London.....	29.757	29.721	38.6	...	43.8	34.5	39.1	38.6	1.79	Chiswick
	Lincoln Hill	29.768	29.726	39.0	...	43.3	36.3	39.8	39.8	...	Lin Hill
	Difference...	...	...	0.4	...	0.5	1.8	0.7	1.2	...	Difference
February.	London.....	...	...	38.	...	42.3	34.	38.1	37.7	1.61	Chiswick
	Lincoln Hill	29.630	29.695	40.	..	43.8	35.1	39.4	39.4	1.283	Lin. Hill
	Difference...	...	...	0.2	...	1.5	1.1	1.3	1.7	0.327	Difference
March.	London.....	...	...	45.2	...	50.5	40.2	45.3	44.9	3.30	Chiswick
	Lincoln Hill	29.313	29.305	42.1	...	48.8	37.9	43.3	43.3	3.693	Lin. Hill
	Difference...	...	...	3.1	...	1.7	2.3	2.0	1.6	0.393	Difference
April.	London.....	29.808	29.777	46.1	...	51.3	40.5	45.9	45.4	2.98	Chiswick
	Lincoln Hill	29.650	29.610	45.7	...	51.8	39.6	45.7	45 7	2.769	Lin. Hill
	Difference...	.158	.167	0.4	...	0.5	0.9	0.2	0.3	0.211	Difference
May.	London.....	30.123	30.094	53.1	...	60.6	44 7	52.6	52.5	1.01	Chiswick
	Lincoln Hill	30.027	29.985	51.0	...	61.9	42.1	52.0	52.0	0.517	Lin. Hill
	Difference...	.096	.109	2.1	...	1.3	2.6	.6	.5	0.493	Difference
June.	London.....	29.858	29.837	63.	. .	69.1	55.2	62.1	61.7	1.66	Chiswick
	Lincoln Hill	29.708	29.684	60.3	. .	67.	53.3	60.1	60.1	1.715	Lin. Hill
	Difference...	.150	.153	2.7	. .	2.1	1.9	2.0	1.6	.055	Difference
July.	London.	29.919	29.883	68.2	...	71.9	57.1	64.5	63.5	1.78	Chiswick
	Lincoln Hill	29.773	29.780	61 7	...	68.8	53.4	61.1	61.1	2.317	Lin. Hill
	Difference...	.146	.103	7.5	...	3.1	3.7	3.4	2.4	0.537	Difference
August.	London.....	29.978	29.939	61 5	...	68.9	54.5	61.7	60.6	1.97	Chiswick
	Lincoln Hill	29.802	29.801	58.	...	68.4	50.2	60.8	60.8	1.524	Lin. Hill
	Difference...	0.176	.138	3 5	...	0.5	4.3	0.9	0.2	0.446	Difference
September.	London.....	29.800	29.783	56.	..	61.2	50.3	55.7	54.7	3 81	Chiswick
	Lincoln Hill	29.656	29.615	54.2	...	61.	47.4	54.2	54.2	1.860	Lin. Hill
	Difference...	.144	.158	1.3	...	0.2	2.9	1.5	0.5	1.950	Difference
October.	London.....	29.766	29.769	49.3	...	53.5	45.3	49.4	48.6	3.62	Chiswick
	Lincoln Hill	29.585	29.589	50.1	..	54.1	41.4	47.7	47.7	3.915	Lin. Hill
	Difference...	.181	.180	0.8	...	0.6	3.9	1.7	0.9	0.295	Difference
November.	London.....	29.586	29.587	43.1	...	47.6	38.7	43.1	42.7	3.60	Chiswick
	Lincoln Hill	29.405	29.416	44.1	...	47.7	39.1	43.4	43.4	5.12	Lin. Hill
	Difference .	.181	.171	1.0	...	0.1	0.4	0.3	0.7	1.52	Difference
December.	London.....	29.770	29.758	41 9	...	44.4	38.	41.2	40.2	1.48	Chiswick
	Lincoln Hill	29.656	29.645	40.2	..	43.8	37.	40.4	40.4	2.385	Lin. Hill
	Difference...	.114	.113	0.8	...	0.6	1.	0.8	0.2	0.905	Difference
MEAN.	London.....	...	...	...	...	...	..	49.9	48.4	TOTAL. 28.61	Chiswick
	Lincoln Hill	29.664	29.637	...	...	...	...	49.0	49.0	28.9	Lin. Hill
	Difference...	...	...	...	...	...	...	.9	0.6	29	Difference

	1837.	Barometer. At 9, a. m.	Barometer. At 3, p. m.	Temperature of air. At 9 a. m.	At 3 p. m.	Mn. max.	Mn. min.	Mean.	At Chiswick and Lin. Hill. Mean.	Rain, inches.	
January.	London.....	29.915	29.888	38.4	40.6	42.7	35 3	39.	38.1	3.26	Chiswick
	Lincoln Hill	29.824	29.771	37 3	39.4	40.9	35.	37.9	37.9	3.86	Lin. Hill
	Difference...	0.091	.117	1.1	1.2	1.8	0.3	1.1	0.2	0.60	Difference
February.	London.....	29.927	29.889	40.9	45.	46.5	38.	42.2	40.9	2.00	Chiswick
	Lincoln Hill	29.729	29.712	41.7	45.2	46.1	38.1	42.1	42.1	2.85	Lin. Hill
	Difference...	0.198	.177	0.8	0.2	0.4	0.1	0.1	1.2	0.85	Difference
March.	London.....	29.934	29.904	37.4	41.3	42.6	33.9	38.2	37.5	0.59	Chiswick
	Lincoln Hill	29.823	29.800	35.9	40.4	40.9	31.2	36.0	36.0	1.213	Lin. Hill
	Difference...	0.111	.104	1.5	0.9	1.7	2.7	2.2	1.5	0.623	Difference
April.	London.....	29.750	29.724	42.4	45.8	47.	37.3	42.1	41.5	2.07	Chiswick
	Lincoln Hill	29.643	29.611	40 7	45.	47.1	34.6	40.8	40.8	1.294	Lin. Hill
	Difference...	.107	.113	1.7	.8	0.1	2.7	1.3	0.7	.776	Difference
May.	London.....	29.895	29.871	50.6	55.6	57.6	44.4	51.	49.5	1.07	Chiswick
	Lincoln Hill	29.791	29.779	51.	56.6	57.2	40.6	48.9	48.9	1.06	Lin. Hill
	Difference...	.104	.092	0.4	1.0	0.4	3.8	2.1	0.6	.01	Difference
June.	London.....	29.941	29.921	61.4	67.	68.5	53.8	61.1	59.9	1.31	Chiswick
	Lincoln Hill	29 809	29.785	59.1	66.2	67.9	50.3	59.1	59.1	2.165	Lin. Hill
	Difference. .	.132	.136	2.3	0.8	0.6	3.5	2.0	0.8	0.855	Difference
July.	London.....	29.909	29.879	63.8	69.2	71.7	56.7	64.2	65.2	1.78	Chiswick
	Lincoln Hill	29.785	29.739	62.5	69.4	70.9	54.3	62.6	62.6	1.975	Lin. Hill
	Difference...	.124	.140	1.3	.2	0.8	2.4	1.6	2.6	.195	Difference
August.	London.....	29.923	29.894	62.7	68.3	70.	56.6	63.3	60.6	3.9	Chiswick
	Lincoln Hill	29.810	29.788	59.9	66.1	67.4	53.5	60.5	60.5	4.12	Lin. Hill
	Difference...	.113	.106	2 8	2.2	2.6	3.1	2.8	0.1	0.22	Difference
September.	London.....	29.836	29.810	57.6	61.6	63.2	51.7	57.4	55.7	1.7	Chiswick
	Lincoln Hill	29.723	29.674	54.4	59.6	61.6	48.9	55.2	55.2	2.087	Lin. Hill
	Difference...	.107	.136	3 2	2.0	1.6	2.8	2.2	0.5	0.287	Difference
October.	London.....	30.070	30.032	51.5	57.2	58.8	46.1	52.4	50.	2.39	Chiswick
	Lincoln Hill	29.935	29.919	50.4	55.9	56.6	44.4	50.5	50.5	1.78	Lin. Hill
	Difference...	.135	.113	1.1	1.3	2.2	1.7	1.9	0.5	0.61	Difference
November.	London.....	29.817	29.782	41.2	46.4	49.	37.2	43.1	40.3	1.320	Chiswick
	Lincoln Hill	29.704	29.682	42.4	46.3	48.1	37.1	42.6	42.6	2.320	Lin. Hill
	Difference ..	.113	.100	1.2	0.1	0.9	0.1	0.5	2.3	1.000	Difference
December.	London... ..	29.933	29.907	42.2	44.8	46.6	39.8	43.2	41.0	1.35	Chiswick
	Lincoln Hill	29.795	29.768	41.2	43.7	44.7	36.8	41.7	41.7	2.744	Lin. Hill
	Difference...	.138	.139	1.0	1.1	1.9	1.0	1.5	0.7	1.394	Difference
MEAN.	London.....	29.903	29.875	49.1	53 8	55.35	43.98	48.76	48.35	TOTAL. 22.70	Chiswick
	Lincoln Hill	29.778	29.749	48.	52.8	54.11	42.23	48.15	48 15	27.76	Lin. Hill
	Difference...	.125	.126	1.1	1.0	1.24	1.75	1.61	0.2	5.06	Difference

1838.		Barometer.		Temperature of air.					At Chiswick and Lin. Hill.		
		At 9, *a. m.*	At 3, *p. m.*	At 9, *a. m.*	At 3, *p. m.*	Mn. max.	Mn. min.	Mean.	Mean.	Rain, inches.	
January.	London.....	29.390	29.866	30.1	32.4	34.4	27.1	30.75	27.6	0.27	Chiswick
	Lincoln Hill	29.745	29.739	29.0	32.1	32.7	25.5	29.10	29.1	1.36	Lin. Hill
	Difference...	.145	.127	1.1	0.3	1.7	1.6	1.65	1.3	1.09	Difference
February.	London... ..	29.577	29.544	33.8	37.4	38.4	31.2	34.5	32.6	2.22	Chiswick
	Lincoln Hill	29.435	29.411	32.2	35.5	36.1	30.4	33.2	33.2	3.60	Lin. Hill
	Difference...	.142	.133	1.6	1.9	2.3	0.8	1.3	0.6	1.38	Difference
March.	London.....	29.772	29.758	42.7	47 6	49.2	38.1	43.65	42.1	0.86	Chiswick
	Lincoln Hill	29.657	29.636	41.0	47.2	47.6	36.8	42.2	42.2	1.24	Lin. Hill
	Difference...	.115	.122	1.7	0.4	1.6	1.3	1.45	0.1	0.38	Difference
April.	London.....	29.739	29.718	44.7	49.	50.2	39.2	45.05	44.0	0.52	Chiswick
	Lincoln Hill	29.647	29.622	43.5	48.4	50.1	38.3	44.2	44.2	0.85	Lin. Hill
	Difference...	.092	.096	1.2	0.6	0.8	0.9	0.85	0.2	0.33	Difference
May.	London.....	29.835	29.818	53.4	59.3	61.3	45.8	53.5	53.3	0.92	Chiswick
	Lincoln Hill	29.732	29.697	50.9	58.	59.1	43.6	51.3	51.3	4 25	Lin. Hill
	Difference...	.103	.121	2.5	1.3	2.2	2.2	2.2	2.0	3.33	Difference
June.	London.....	29.802	29.787	60.5	64.2	66.6	53.6	61.1	59.9	3.65	Chiswick
	Lincoln Hill	29.671	29.657	57.4	62.4	64.4	50.5	57.4	57.4	4.63	Lin. Hill
	Difference...	.131	.130	3.1	1.8	4.2	3.1	3.7	2.5	0.98	Difference
July.	London.....	29.915	29.906	63.3	68.1	70.8	56.	63.4	62.7	2.19	Chiswick
	Lincoln Hill	29.803	29.792	60.6	65.9	67.7	53.1	60.4	60.4	1.43	Lin. Hill
	Difference...	.112	.114	2.7	2.2	3.1	2.9	3.0	2.3	0.76	Difference
August.	London.....	29.851	29.831	62.8	67.4	69.	56.4	62.7	61.6	1.23	Chiswick
	Lincoln Hill	29.736	29.726	60.4	65.3	67.	54 5	60.5	60.5	2.47	Lin. Hill
	Difference...	.115	.105	2.4	2.1	2.	1.9	2.2	1.1	1.24	Difference
September.	London.....	29.923	29.897	55.9	61.5	62.6	51.5	57.	56.1	2.08	Chiswick
	Lincoln Hill	29.826	29 793	54.	61.7	63.7	48.1	55.9	55.9	1.56	Lin. Hill
	Difference...	.097	.104	1.9	0.2	0.1	3.4	1.1	0.2	0.46	Difference
October.	London.....	29.930	29.910	51.5	55.1	57.4	47.0	50.8	48.8	2.36	Chiswick
	Lincoln Hill	29.838	29.799	50.4	52.8	55.2	44.8	50.0	50.0	2.82	Lin. Hill
	Difference...	.092	.111	1.1	2.3	2.2	2.2	0.8	1.2	0.46	Difference
November.	London.....	29.543	29.475	41.9	45.3	46.8	38.9	42.8	42.4	2.735	Chiswick
	Lincoln Hill	29.392	29.322	39.6	43.6	44.2	36.3	40.2	40.2	6.710	Lin. Hill
	Difference...	.151	.153	2.3	1.7	2.6	2.6	2.6	2.2	3.975	Difference
December.	London.	30.042	30.030	39.6	42.4	43.5	37.5	40.5	38.5	1.72	Chiswick
	Lincoln Hill	29.896	29.896	39.3	42.2	42.9	35.5	39.2	39.2	2.33	Lin. Hill
	Difference...	.146	.134	0.3	0.2	0.6	2.0	1.3	0.7	0.61	Difference
										TOTAL.	
MEAN.	London.....	29.818	29.795	48.7	52.5	54.4	43.5	48.9	47.97	21.27	Chiswick
	Lincoln Hill	29.698	29.674	46.5	51.2	52.8	41.8	47.3	47.3	33.25	Lin. Hill
	Difference..	.120	.121	2.2	1.3	1.6	1.7	1.6	0.67	9.98	Difference

	1839.	Barometer.		Temperature of air.					At Chiswick and Lin. Hill.		
		At 9, *a. m.*	At 3, *p. m.*	At 9, *a. m.*	At 3, *p. m.*	Mn. max.	Mn. min	Mean.	Mean.	Rain, inches.	
January.	London.....	29.877	29.833	38.2	40.9	43.3	34.7	39.	37.6	1.27	Chiswick
	Lincoln Hill	29.787	29.760	37.1	39.8	41.3	34.	37.6	37.6	1.28	Lin. Hill
	Difference..	.090	.073	1.1	1.1	2.0	0.7	1.4	0.0	.01	Difference
February.	London.....	29.943	29.931	40.5	44.4	44.7	37.1	40.9	40.6	2.19	Chiswick
	Lincoln Hill	29.817	29.794	39.3	43.8	44.3	35.6	39.9	39.9	1.41	Lin. Hill
	Difference...	.126	.137	1.2	0.6	0.4	1.5	1 0	0.7	0.78	Difference
March.	London.....	29.775	29.750	41.3	45.0	44.2	37.4	40.8	40 2	1.95	Chiswick
	Lincoln Hill	29.648	29.636	40.7	44.7	44.8	36.1	40.5	40.5	1.305	Lin. Hill
	Difference...	.127	.114	0.6	0.3	0.6	1.3	0.3	0.3	0.645	Difference
April.	London.....	30.030	30.016	44.8	49.2	46.	39.7	42.8	44.4	1.46	Chiswick
	Lincoln Hill	29.932	29.918	44.2	49.	50.4	38.2	44.3	44.3	2.62	Lin. Hill
	Difference...	.098	.098	.6	.2	4.4	1.5	1.5	0.1	1.16	Difference
May.	London.....	29.909	29.845	52.3	58.9	60.5	40.	50.5	52.4	0.82	Chiswick
	Lincoln Hill	29.829	29.772	51.	58.6	59.8	41.8	50.8	50.8	0 98	Lin. Hill
	Difference...	.080	.073	1.3	0.3	0.7	1.8	0.3	1 6	0.16	Difference
June.	London.....	29.832	29.823	61.9	66.3	70.2	54.9	62.5	59.4	3.00	Chiswick
	Lincoln Hill	29.718	29.696	58.2	64.	65.5	50.	57.7	57.7	5.15	Lin. Hill
	Difference...	.114	.127	3.7	2.3	4.7	4.9	4.8	1.7	2.15	Difference
July.	London.....	29.838	29.821	63.1	67.3	69.9	56.7	63.3	61.6	2.92	Chiswick
	Lincoln Hill	29.697	29.674	62.4	63.6	67.	53.6	60.3	60.3	5.35	Lin. Hill
	Difference...	.141	.147	0.7	3.7	2.9	3.1	3.0	1.3	2.43	Difference
August.	London.....	29.926	29.906	62.1	66.5	68.6	55.4	62.	61.4	1.85	Chiswick
	Lincoln Hill	29.799	29.790	59.2	63.7	64.5	51.6	57.8	57.8	2.70	Lin. Hill
	Difference...	.127	.116	2.9	2.8	4.1	3.8	4.2	3.6	0.95	Difference
September.	London.....	29.593	29.587	58.3	61.7	63.5	53.	58.2	57.7	3.92	Chiswick
	Lincoln Hill	29.434	29.428	55.5	61.0	61.1	49.	55.2	55.2	5.485	Lin. Hill
	Difference...	.159	.159	2.8	0.7	2.4	4.	3.0	2.5	1.565	Difference
October.	London.....	29.962	29.943	50.5	54.6	54.3	47.3	50.8	51.4	2.23	Chiswick
	Lincoln Hill	29.840	29.811	47.2	52.0	55.5	43.3	49.4	49.4	3.97	Lin. Hill
	Difference...	.122	.132	3.3	2.6	1.2	4.0	1.4	2.0	1.74	Difference
November.	London.....	29.656	29.627	46.4	49.1	48.	43.8	45 9	45.5	4 27	Chiswick
	Lincoln Hill	29.515	29.493	43.9	46.5	48.5	40.2	44.2	44.2	4.80	Lin. Hill
	Difference...	.141	.134	2 5	2.6	0.5	3 6	1.7	1.3	0.53	Difference
December.	London.....	29.693	29.659	41.	43.9	41 8	38.4	40.1	38.6	2.32	Chiswick
	Lincoln Hill	29.589	29.534	35.3	41.1	42.	34.1	38.2	38.2	1.31	Lin. Hill
	Difference...	.104	.115	5 7	2.8	0 2	4.3	1.9	0.4	1.01	Difference
MEAN.	London.....	29.836	29.811	50.	54.	54.6	45.1	49.8	49.2	TOTAL. 28.2	Chiswick
	Lincoln Hill	29.717	29.692	47.8	52.3	53.9	42.3	48.1	48.1	38.6	Lin. Hill
	Difference...	.119	.119	2.2	1.7	0.7	2.8	1.7	1.1	10.4	Difference

I shall now proceed to discuss the observations under the heads of atmospheric pressure, temperature, and rain.

PRESSURE.

For the purpose of comparing the atmospheric pressure at the two stations, the observations for the last three years, viz., 1837–38–39, only have been made use of, principally because the Royal Society's barometer, which has been described, began to be used on the first day of 1837.

The mean height of the barometer at Somerset House, at nine, *a.m.*, for the three years, is 29.853 in.; and at three, *p.m.*, is 29.827 in. The difference, or mean daily oscillation, from nine, *a.m.*, to three, *p.m.*, = .026 in.

The mean height of the barometer at Lincoln Hill, at nine, *a.m.*, is 29.731 in.; and at three, *p.m.*, is 29.705 in. The mean daily oscillation is = .026 in., precisely the same quantity as in London. The mean difference of the height of the barometer at the two stations is = 0.122 in.

The greatest difference between the mean annual heights of the barometer at Somerset House is .083 in.; at Lincoln Hill it is .076 in. The annual difference at the two stations varies from .126 in. in 1837, to .119 in. in 1839, or .007 in. Table, No. 5, contains a chart of the barometric curve at the two stations from the observations, at nine, *a.m.*, for the year 1838, and shows the general agreement of the variations of the mercurial column at the two

stations; it may however be observed, that in the case of sudden falls of the mercury, the fall is generally greater at Lincoln Hill than at Somerset House; or, in other words, the difference between the two curves at their lowest points of descent is greater than the mean difference of 0.122 in. The highest point which the barometer, corrected for temperature and capillarity, reached at Somerset House during the three years, was 30 648 in., on the 14th of October, 1837; the lowest, 28.557 in., November 29th, 1838. The highest point at Lincoln Hill was 30.547 in.; the lowest, 28.324 in., on the days mentioned. The range in London was therefore = 2.091 in.; at Ross, = 2.223 in. The difference of range = .132 in.

The mean height of the barometer for each month in the year, deduced from the observations at nine, a.m., is shown in the following table.

	Somerset House. Inches.	Lincoln Hill. Inches.	Difference. S. H.—L. H.
January	29.897	29.785	0.115
February	29.815	29.660	0.155
March	29.827	29.678	0.149
April	29.839	29.740	0.099
May	29.879	29.784	0.095
June	29.858	29.733	0.125
July	29.887	29.762	0.125
August	29.900	29.782	0.118
September	29.782	29.661	0.121
October	29.987	29.871	0.116
November	29.672	29.537	0.135
December	29.889	29.760	0.129
Mean	29.853	29.731	0.122

From this table it appears that the month of October had the highest mean during the period, and November the lowest, at both stations; that the mean of the month of June differs the least from the mean of the whole, or .005 at Somerset House, and .002 at Lincoln Hill; that the difference in the height of the barometer at the two stations is greatest in February, and least in May; and that the difference from the mean difference of 0.122 is only .001 in September, and .003 in June and July.

Before I conclude the discussion of the barometrical observations, I may be permitted to advert to a question of some interest which belongs to them, viz., to the determination of differences of level, by means of the barometer, between stations considerably distant. (In the present instance the distance was about one hundred and twenty miles, and the stations nearly east and west from each other.) If we take the necessary data for calculating the difference of level from the observations made at nine, *a.m.*, viz., the corrected height of the barometer at Somerset House = 29.853, the temperature of the air = 49.3; the corrected height of the barometer at Lincoln Hill = 29.731, the temperature of the air = 47.4; the difference of the level, as obtained by Mr. Baily's formula, is 111.4 feet. The data given by the observations at three, *p.m.*, are, at Somerset House, barometer = 29.827, temperature of air 53.4; at Lincoln Hill, barometer = 29.705, temperature of air = 52.1; whence the difference of level = 113.2 feet. The difference of

level therefore between the cisterns of the barometers, determined from the whole of the observations made twice a day, is 112.3 feet; and as the cistern of the Royal Society's barometer has been determined to be 97 feet above the mean level of the sea, it follows that that at Lincoln Hill is 112.3 + 97 = 209.3 feet above the mean level of the sea.

Let us now proceed to inquire what is the shortest time in which the observations will give a difference of level which shall approximate to the result obtained from the mean of all the three years' observations. We find, in the first place, as it has been already stated, that the difference in the mean heights of the barometers at the two stations for one year varies from that of another year by .007 in., which would correspond to a difference of level of about 6.4 feet. Secondly, as an inspection of the abstracts and of the chart of the barometric curve shows that the smallest range of the barometer and the least deviation from its mean obtains in the summer, we will inquire what result can be obtained from the mean height of the barometer during the three summer months of June, July, and August. The following table contains the necessary data:—

	Mean of the three Summer months.					
	1837.		1838.		1839.	
	Barom.	Temp. of air.	Barom.	Temp. of air.	Barom.	Temp. of air.
Somerset House	29.911	63.5	29.843	64.3	29.857	64.5
Lincoln Hill ...	29.785	62.2	29.730	61.9	29.729	62.7
Difference	.126	Sum. 125.7	Dif. .118	Sum. 124.2	Dif. .128	Sum. 127.2

From this it appears that the greatest difference in the height of the barometer during the three summer months in any one year differs from the mean difference obtained in the three years by .128 − .122 = .006; or if we calculate the difference of level from the data supplied by the summer months of the year 1837, we obtain a difference of level = 118 feet; from those of 1838, = 110.7 feet; from 1839, = 120.5 feet. The mean of the three numbers thus obtained is 116.4 feet, a quantity greater by 4.1 feet than that obtained from the mean of three years' observations; while the greatest difference from this mean is = 120.5 − 112.3 = 8.2 feet. Thirdly, it has already been stated that the mean height of the barometer for the month of June differs less than that of any other month from the mean of all the three years. If then we now calculate the difference of level from the observations made in the month of June, we have for those of June, 1837, 125 feet; for June, 1838, 122 feet; for June, 1839, 112.8; the greatest difference from the result of all the observations is therefore 12.7 feet, and the least 0.5 feet.

TEMPERATURE.

In considering the subject of temperature, the results obtained from the observations made at the Horticultural Society's garden, at Chiswick, have been principally relied on as a standard of comparison, being probably free from the effects produced by the presence of a large town, which affect the thermometer of Somerset House.

The following table shows the mean temperature of each month, from four years' observations, viz., 1836–7–8–9.

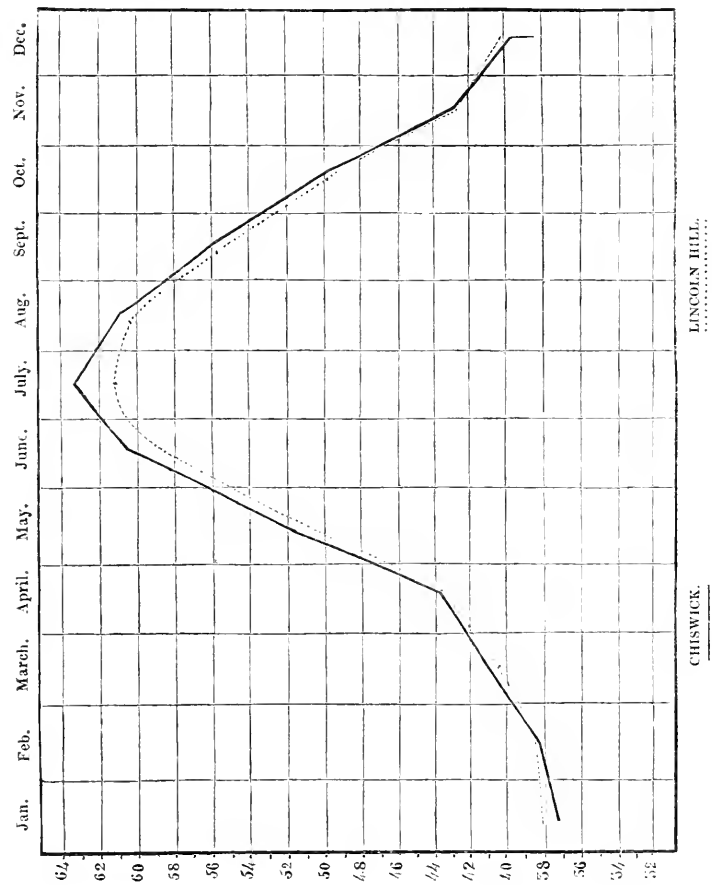
	Somerset House.	Chiswick.	Lincoln Hill, Ross.	Difference. C.—R.
January	39.3	37.3	38.1	−0.8
February	38.9	38.1	38.4	−0.3
March	41.9	41.2	40.5	0.7
April	43.9	43.8	43 75	0.05
May	51.9	51.7	50 75	0.95
June	61.7	60.2	58.6	1.6
July	63 8	63 2	61.1	2.1
August	62.	61.	60.	1.0
September	57.	56.	55.1	0.9
October	50.8	49.7	49.4	0.3
November	43.9	42.7	42.6	0.1
December	41.2	39 8	40.1	−0.3
Mean*	49.7	48.7	48.2	0.5

The mean temperature at Lincoln Hill, deduced from observations made at nine, *a.m.*, is 48 Fah., or only .2 of a degree less than the mean temperature deduced from the daily observations of maxima and minima. At Leith, according to the observations instituted by Sir David Brewster, the time in the morning at which the mean temperature was equal to the mean temperature of the twenty-four hours for the whole year, was at thirteen minutes past nine; while at Plymouth, according to Mr. S. Harris's observations,† the critical hour appears to occur between eight and nine, *a.m.*

* Mr. Howard estimates the mean temperature of London at 50.5, and of the country in its neighbourhood at 48.5.

† *Report of the British Association*, vol. vii., p. 24.

The following chart shows the curves of mean monthly temperature at Chiswick and Lincoln Hill.



TEMPERATURE OF THE SEASONS.

If the spring be taken to consist of the months of March, April, May; the summer the months of June, July, August; the autumn, September, October, November; the winter, December, January,

and February; then the following table will show the mean temperature of the seasons, and their differences at the three stations:—

	Somerset House.	Chiswick.	Lincoln Hill.	Difference. S.—L. H.	Difference. C.—L. H.	Diff. S.—C.
Spring	45.9	45.5	45.0	0.9	0.5	0.4
Summer	62.5	61.4	59.9	2.6	1.5	1.1
Autumn	50.5	49.4	49.0	1.5	0.4	1.1
Winter	40.2	38.4	38.8	1.4	0.2	1.8

But as the temperature of any station is partly dependent on its height above the sea, and as the stations at Lincoln Hill and at Chiswick are on a different level, it may be worth while to show what would have been the difference of temperature if the first-named station had been on the same level as the last. The station at Chiswick appears to be about 74 feet below that of the Royal Society's barometer at Somerset House, by deducing the difference of level from six months' observations of the barometer at the two places, and therefore 74 + 112 (the height of Lincoln Hill above the station at Somerset House) = 186 feet, = the height of Lincoln Hill above the station at Chiswick; now as 100 yards of ascent are equivalent in this country to 1°, Fah., of diminution of temperature, 180 feet or 60 yards will give .6, Fah., and the mean temperature of the seasons at the two places in question would be as shown in the following table:—

	Chiswick.	Lincoln Hill.	Difference. C.—L.
Spring	45.5	45.6	−0.1
Summer	61.4	60.5	0.9
Autumn	49.4	49.6	−0.2
Winter	38.4	39.4	−1.0
Mean	48.7	48.8	−0.1

The difference of latitude between the two stations is about 24′; and as 1° of latitude is equal, according to Brewster's formula,* to a difference of .9 degree of temperature, Fah., 24′ will give .4 Fah., so that the mean temperature at Lincoln Hill is 0.4 + 0.1 = 0.5., Fah, higher than we should estimate it to be from taking into our consideration the mean temperature at Chiswick and the difference in latitude and elevation between Chiswick and Lincoln Hill. I say nothing of the mean daily range, and of its difference at the stations, for reasons alluded to when speaking of the position of the instruments; that is to say, that at Chiswick the range obtained would be greater than the truth, while at Lincoln Hill it is possible that it would be something less; and if so, the sum of these errors, which are in opposite directions, would be accumulated on any attempt that should be made to derive from them the difference of the mean daily range of the thermometer at the two stations.

In the remarkable cold which occurred in January, 1838, the thermometer, on the 19th of that month, sunk at Chiswick to − 4; whereas, at Lincoln Hill, it sunk no lower than + 9, and the injury done to vegetation was proportionably less than at Chiswick. The only plants observed to be killed at Lincoln Hill were some small shrubby species of cistus; laurestinus was a good deal injured; but arbutus unedo, cypress, and laurus nobilis were uninjured.†

* T = 81.5 cos. lat.

† For the effects of this low temperature on vegetation at different parts of England, see a paper by Lindley, in the *Transactions of the Horticultural Society.*

RAIN.

Average quantity of rain, in inches, which fell in each month, at Chiswick and Lincoln Hill, in the years 1836–37–38–39.

	Chiswick. Inches.	Lincoln Hill. Inches.	Difference. L. H.—C.
January	1.64	2.08	0.44
February	2.00	2.28	0.28
March	1.54	1 87	0.33
April	1.76	1.88	0.12
May	0.95	1 70	0.75
June	2.40	3.41	1.01
July	2.17	2.78	0.61
August	2.24	2.70	0.46
September	2.83	2.75	0.08
October	2.65	3.12	0.47
November	3.18	4.74	1.56
December	1.72	2.75	1.03
Total*	25.08	32.06	6.98

From this it appears that the driest month at both stations was May; the wettest, November.

The following table shows the quantities of rain which fell in the different seasons, and the differences at the stations.

	Spring. Inches.	Summer. Inches.	Autumn. Inches.	Winter. Inches.
Chiswick	4.25	6.81	8 66	5.36
Lincoln Hill	5.45	8.89	10.61	7.11
Difference	1.20	2.08	1.95	1.75
Vicinity of London according to Howard; mean of 34 years	4.31	6.68	7.44	5.87

* Mr. Howard obtains 25 in. as the average annual amount of rain near London, deduced from thirty-four years observations.—*Climate of London*, vol. i., p.p. 101 and 131. Professor Rigaud gives 22.2 in. as the mean amount of rain at Oxford, from nineteen years' observations.

From the whole of these observations it appears that the most striking difference between the climates of Herefordshire and London, to the disadvantage of the former, is the lower temperature of the summer, and the greater quantity of rain which falls at that season in Herefordshire.

ARTICLE IV.

MEDICAL TOPOGRAPHY OF SHREWSBURY

AND ITS NEIGHBOURHOOD.

BY T. OGIER WARD, M.D.

[CONTINUED FROM VOL. IX.]

APPENDIX, No. 1.

IN the following lists of the fauna and flora of this district, I have endeavoured to comprise such productions of the neighbourhood of Shrewsbury as may render it interesting to the lovers of Nature, and also serve to illustrate its climate, soil, and geographical position.

For a list of its numerous and beautiful fossils, I must refer to Mr. Murchison's great work on the Silurian system, and to that of Mr. Prestwich on the Coalbrookdale coalfield; and I have only to add, on this subject, that the bones of an animal have been recently found in the sandstone at Grinsill, which Professor Owen connects with the footsteps before mentioned* and to which, from the beaked form of the upper jaw, he has given the name of Rhyncosaurus.

For a complete list of the fauna of Shropshire and North Wales, the papers by T. C. Eyton, Esq., of Eyton, in Shropshire, on this subject, in the *Annals of Natural History*, should be consulted.

* Vol ix., page 277.

List of rare plants found in the neighbourhood of Shrewsbury, supplied by W. A. Leighton, Esq., author of the Flora of Shropshire.

Acinos vulgaris
Acorus Calamus
Actinocarpus Damasonium
Adonis autumnalis
Agrostis Spica-venti
Alopecurus agrestis
Althæa officinalis
Anagallis cærulea
Anchusa officinalis
sempervirens
Anemone apennina
ranunculoides
Anthemis arvensis
maritima
nobilis
Anthriscus Cerefolium
Antirrhinum Orontium
Apium graveolens
Arabis hirsuta
Arbutus Uva Ursi
Arenaria tenuifolia
Asperugo procumbens
Aspidium aculeatum
Oreopteris
Asplenium irriguum
Astragalus glycyphyllus
Atriplex deltoidea
Atropa Belladonna
Ballotta alba
fætida
nigra
ruderalis
Betula alba
pendula
Blysmus compressus
Borago officinalis
Botrychium Lunaria
Bromus erectus
racemosus
secalinus
Butomus umbellatus
Buxus sempervirens
Calamagrostis Epigejos
Calamintha officinalis
Camelina sativa
Campanula glomerata
hederacea
hybrida
latifolia
Cardamine impatiens
Carduus Marianus
tenuiflorus
Carex dioica
distans
divulsa
elongata
extensa
flava
polystachea
hirta
intermedia
paludosa
riparia
strigosa

Carpinus betulus
Castanea vulgaris
Catabrosa aquatica
Cerastium arvense
Ceratophyllum demersum
Chenopodium ficifolium
intermedium
murale
Chrysosplenium alternifolium
Cichorium Intybus
Cistopteris dentata
fragilis
Clematis Vitalba
Cnicus pratensis
Cochlearia Armoracia
danica
Coridalis solida
Crocus vernus
Cryptogramma crispa
Cuscuta Epilinum
Cynoglossum sylvaticum
Daphne Mezereum
Datura Stramonium
Delphinium Consolida
Dianthus Armeria
plumarius
Dipsacus Fullonum
Doronicum Pardalianches
Draba muralis
Elatine hexandra
Eleocharis multicaulis
pauciflora
Epilobium angustifolium
tetragonum
Epipactis ensifolia
viridiflora
Equisetum fluviatile
Equisetum hyemale
Eriophorum polystachion
pubescens
Erodium maritimum
moschatum
Erysimum cheiranthoides
Euphorbia Cyparissias
Festuca elatior
Fœniculum vulgare
Hieracium umbellatum
Hippocrepis comosa
Hippuris vulgaris
Hordeum pratense
Hymenophyllum Wilsoni
Hypericum Androsæmum
montanum
Hypochæris vera
balbisii
glabra
Iris fœtidissima
Isoetes lacustris
Juncus compressus
obtusiflorus
Juniperus communis
Lactuca virosa
Leonurus Cardiaca
Lepidium Smithii
Ligustrum vulgare
Limosella aquatica
Linaria minor
var.
Linum perenne
usitatissimum
Listera cordata
Nidus-Avis
Littorella hirsuta
lacustris

Lolium arvense
temulentum
Lonicera Caprifolium
Xylosteum
Luzula pilosa
Lychnis viscaria
Lycopodium alpinum
Selago
Marrubium vulgare
Medicago sativa
Melampyrum cristatum
sylvaticum
Melica nutans
Melilotus officinalis
Mentha gentilis
piperita
Pulegium
rubra
sylvestris
viridis
Mercurialis annua
Monotropa Hypopitys
Myriophyllum verticillatum
Myrrhis odorata
Narcissus biflorus
poeticus
Nasturtium amphibium
Œnothera biennis
Onobrychis sativa
Onopordum acanthium
Ophrys aranifera
muscifera
Orchis majalis
ustulata
Origanum vulgare
Ornithogalum pyrenaicum
umbellatum
Orobanche elatior
major
Orobus sylvaticus
tenuifolius
Oxalis Acetosella
corniculata
purpurea
Papaver somniferum
Pastinaca sativa
Peplis portula
Phalaris canariensis
Pilularia globulifera
Pimpinella magna
Poa aquatica
Polemonium cæruleum
Polygonum Fagopyrum
Polypodium Phegopteris
Populus alba
canescens
nigra
Potamogeton heterophyllus
lucens
Potentilla argentea
rupestris
verna
Primula elatior
Prunus Cerasus
domestica
Padus
Pulmonaria officinalis
Pyrola minor
rotundifolia
Pyrus Aria
communis
torminalis
Ranunculus acris
minor

Raphanus Raphanistrum
Reseda Alba
Rhamnus catharticus
Ribes nigrum
rubrum
Rosa spinosissima
Rubus affinis
echinatus
Leightoni
villicaulis
carpinifolius
Köehleri
leucostachys
saxatilis
suberectus
plicatus
Rumex Hydrolapathum
maritimus
pratensis
sanguineus
Sagina apetala
Sagittaria sagittifolia
Salix cærulea
amygdalina
aurita
cinerea
decipiens
ferruginea
Forbyana
fragilis
Hoffmanniana
holosericea
Lambertiana
pentandra
Smithiana
undulata
vitellina
Salvia pratensis
verbenaca
Samolus Valerandi
Sanguisorba officinalis
Saponaria officinalis
Saxifraga hypnoides
Scheuchzeria palustris
Scirpus setaceus
Scolopendrium vulgare
Scrophularia vernalis
Sedum album
anglicum
dasyphyllum
Telephium
Senecio saracenicus
Serratula tinctoria
Sesleria cærulea
Silene nutans
Sinapis alba
tenuifolia
Sison Amomum
Sium latifolum
Smyrnium Olusatrum
Solanum nigrum
Sonchus palustris
Spergula nodosa
Spiræa Filipendula
salicifolia
Stachys intermedia
palustris
Stellaria nemorum
Stratiotes aloides
Subularia aquatica
Taxus Dovastonia
Teucrium Chamædrys
Thalictrum flavum
minus

Tilia Europæa
parvifolia
Torilis nodosa
Tormentilla reptans
Trifolium erectum
fragiferum
striatum
Tulipa sylvestris
Ulmus glandulosa
Urtica pilulifera
minor
vulgaris
Valeriana rubra
Verbascum Blatteria
Lychnitis
nigrum
virgatum
Veronica Buxbaumii
polita
hybrida
Vicia Bobartii
lathyroides
Vinca major
minor
Viola flavicornis
amœna

APPENDIX, No. 2.

A part of this list of the rarer birds seen round Shrewsbury I have copied from the "Guide through Shrewsbury," with the permission of the proprietor, to whom it was supplied by J. F. M. Dovaston, Esq., of Westfelton, a devoted admirer of Nature in all her works. The greater number of the names, however, have been given to me by Messrs. Shaw of this town. The names and arrangement are those of Bewick and Yarrell.

Names.	Localities.
Falco Buteo—Buzzard	Haughmond Hill, Grinsill, Wrekin.
Milvus—Kite	Bomere Pool.
Cyaneus—Hen Harrier	Meadows about Berwick.
Pygargus—Ringtail	Westfelton Moors.
Peregrinus	Marton Pool.
Haliætus	Clun Pool.
Subbuteo—Hobby	Netley.
Æsalon—Merlin	Bicton Heath.
Lagopus—Rough-legged Buzzard	Long Mynd.
Apivorus—Honey Buzzard	Hawkestone.
Æruginosus—Marsh Harrier	Bomere Pool.

Names.	Localities.
Muscicapa Atricapilla—Pied Flycatcher	Wroxeter.
A Lark, undescribed	Isle Common.
Emberiza Cirlus—Cirl Bunting	Salop.
Linaria Canescens—Mealy Redpole	Copthorn.
Strix Otus—Long-eared Owl	Westfelton, rare.
Lanius Excubitor—Ash-coloured Shrike	Babin's Wood, near Whittington.
Collurio—Red-backed Shrike	Wolf Head, Shattaton, Lowe Bank.
Corvus Corax—Raven	Wrekin, Aston.
Cornix—Hooded Crow	Weston Lullingfield.
Ampelis Garrulus—Chatterer	Near Oswestry, occasionally.
Turdus Torquatus—Ring Ouzel	Breidden Hills.
Roseus—Rose-coloured Starling	Meole.
Picus, major et minor—Great and lesser Spotted Woodpecker	Haughmond, both.
Yunx Torquilla—Wryneck	Shrewsbury Quarry, Meole Brace.
Sitta Europæa—Nuthatch	Shrewsbury Quarry.
Upupa Epops—Hoopoe	Rednall, a pair only once seen.
Loxia Curvirostra—Crossbill	On larch trees, occasionally.
Coccothraustes—Grosbeak	Nesscliff.
Enucleator—Pine Grosbeak	Nesscliff.
Fringilla Cannabina—Greater Redpole	Near mountains, Pimhill.
Motacilla Luscinia—Nightingale	Sutton Spa, Westfelton, once
Regulus—Goldencrested Wren	Not uncommon on firs and yews.
Columba Turta—Turtle Dove / Wrekin Dove	Wrekin.
Tetrao Coturnix—Quail	Shotton, Sandford.
Charadrius Pluvialis—Golden Plover	Westfelton, once, very rare.
Hiaticula—Ringed Plover	Severn.
Ardea Stellaris—Bittern	Sandford Pool.
Nycticorax—Night Heron	Wroxeter.
Scolopax Arquata—Curlew	Source of the Morda, above Oswestry.
Phæopus—Whimbrel	Stretton.
Calidris—Redshank	Wroxeter.
Major—Great Snipe	Netley.
Numenius Pygmæus—Pigmy Curlew	Race-course.
Galinula Porzana—Spotted Galinule	Melverley.
Hæmatopus Ostralegus—Oyster-catcher	Near Oswestry, occasionally in winter.
Sturnus Cinclus—Water Ouzel	Meole Brook, Morda.

Names.	Localities.
Rallus Aquaticus—Water Rail	Very uncommon.
Procellaria Pelagica—Stormy Petrel.....	Prees, found dead.
Pelecanus Carbo—Cormorant	The Isle, near Montford Bridge.
Bassanus—Gannet	Eyton.
Phalaropus Lobatus—Grey Phalarope...	Bayston Hill.
Colymbus Cristatus—Great-crested Grebe	Severn.
Septentrionalis—Red-throated Diver	Severn.
Auritus—Eared Grebe.....	Severn.
Glacialis—Great Northern Diver ...	Belton.
Subcristatus—Red-necked Grebe ...	Severn.
Alca Alle—Little Auk.....	Severn.
Sterna Minuta—Lesser Tern	Severn.
Fissipedes—Black Tern.....	Severn.
Lestris Striatus—Pomarine Skua	Sutton.
Parasiticus—Arctic Jager.....	Wem.
Chriococephalus Minutus—Little Gull...	Severn.
Thalassidroma Bullockii—Fork-tail Petrel	Severn.
Mergus Merganser—Goosander	Snowdon.
Serrator—Red-breasted Merganser	Ellesmere.
Albellus—Smew	Not uncommon.
Cygnus Ferus—Wild Swan	
Bewickii—Berwick's Swan	Drayton.
Anser Phœnicopus—Pink-footed Goose..	Hodnet.
Anas Fusca—Velvet Duck	Severn.
Nigra—Scoter	Severn.
Marila—Scaup Duck	Severn.

APPENDIX, No. 3.*

As I have reason to believe that the decrease in the population of Shrewsbury, since the census of 1831, was owing to causes that have in a great measure ceased to operate, I have thought it necessary to recalculate the tables of mortality, and of the value of life in the borough, from the census of 1841.

* See vol. ix., page 321.

			Males.	Females.
Population in 1831	Borough	21297	10018	11279
	Borough and Liberties	23492		
Population in 1841	Borough	18048	8251	9797
	Borough and Liberties	21462	9837	11625
Decrease in	Borough	3149		
	Borough and Liberties	2030		

Table 6.—*Mortality of the borough of Shrewsbury, from Table* 5 ;* *the integer being* 1000.

Under 5 years	253.6	Under 60 years	72.08
10	54.74	70	74.57
20	56.85	80	76.
30	75.01	90	41.73
40	65.93	100	5.5
50	72.96		

Table 7.—*Number of persons living at each age in Shrewsbury ; the integer being* 1000.

Under 5 years	593.84	Under 60 years	198.03
10	539.1	70	123.46
20	482.22	80	47.46
30	407.22	90	5.72
40	341.29	100	.22
50	268.32		

* Vol. ix., page 320.

PART III.

ESSAYS AND CASES.

ARTICLE V.

CASE OF A PIN PASSING FROM THE APPENDIX VERMIFORMIS INTO THE BLADDER.

BY WILLIAM D. KINGDON, M.D.,
Physician to the Exeter Dispensary.

J. P., aged seven years, the son of a labourer. From his mother's account, when he was placed under my care, at the Exeter Dispensary, it appears that in the early part of January, 1836, he awoke in the night-time, complaining of great difficulty of micturition, not being able to pass more than two or three drops of urine at a time. In this state he continued, suffering little pain, and that only from the retention of urine, for upwards of a week; when one morning, making greater efforts than usual, he perceived something of a whitish colour moving about at the orifice of the urethra, and taking hold of it, drew out a female worm (*ascaris lumbricoides*), which was followed by an immediate relief from the foregoing symptoms. No farther notice was taken of the circumstance until twelve or thirteen months afterwards, when the dysuria recurred, and lasted nine or ten days, at the expiration of which term he had severe pain at the neck of the bladder, and said that there was something crawling in his penis; on examination, his mother discovered another worm, and drew it out as in the former instance, and with the same

Fig. 2

Fig. 3

Dr Langdon's case

2 Fistulous Openings

relief. In six months afterwards the same symptoms returned, but subsided in a few days on the evacuation of another worm. On the 4th of October, 1838, he complained of pain in the perinæum and at the extremity of the penis, which continued night and day for more than a week, when it entirely subsided on the passage of another worm. He remained free from pain until January 11th, 1839, when the same distressing symptoms again recurred with aggravated severity, and lasted for two or three days: during this period he was unable to emit any urine, and it was for the first time thought necessary to call in the aid of a medical practitioner, who, on introducing the catheter, drew off a large quantity of water; in the course of the same afternoon a worm crept from the urethra, and, as before, the little sufferer experienced immediate relief. The pain however recurred much more frequently, and the urine was obliged to be drawn off repeatedly. The boy's appetite began to fail, and he lost flesh rapidly. Various professional gentlemen were consulted, but he received no benefit, and gradually became worse.

On the 8th of February, 1839, he came under my care as a patient of the Exeter Dispensary. He then complained of occasional pain in the perinæum and at the extremity of the penis; to make use of his own words, "Like as if there was a worm there, wanting to poke his way out." There was at times difficulty in passing his urine, but not requiring the use of the catheter. The appetite was good; he slept well, and ran about to play with the other children of the village. His mother brought with her the worms he had passed; the largest measured seven inches and a half, the rest were somewhat smaller. Medicine of a soothing character was ordered for

him, from which he appeared to receive considerable benefit, as the pain was less severe and frequent. He continued taking the medicine occasionally for six weeks, by which time the pain had almost entirely left him, and his general health was much improved. He remained in much the same state until the 12th of April, when the afflicting symptoms returned with greater severity than before, and he was unable to pass a single drop of urine. The catheter was introduced, and afforded instant relief; shortly afterwards a worm made its way through the urethra, as on a previous occasion. Up to this period the boy had always voided his urine through the natural passage; but subsequently *per anum*. The pain now recurred two or three times in the course of the day, but was alleviated as soon as he could evacuate the urine from the bladder; the pain was likewise lessened on pressing the perinæum with his hand; occasionally too a day would pass without any uneasy symptom. In the beginning of May, suspecting a calculus in the bladder to be the cause of the *constant* irritation, I requested a skilful surgeon (Mr. Tucker) to see the boy with me, who introduced a sound, but neither he nor I could detect the object of our search. The introduction of the instrument gave most excruciating pain, and during the operation the little sufferer passed his urine through the anus with such force as to project it to a distance of at least four feet. He subsequently became much worse, the spasms recurring more frequently and lasting for a greater period of time; relief could alone be afforded by large doses of hydrocyanic acid and morphia. He frequently complained of the worm attempting to force its way out, and when in great pain a quantity

of purulent matter oozed from the urethra. On the 20th of October he became blind; the pulse averaged 120; the countenance was anxious; the appetite for food very small, and that only for liquids. Very little urine was voided for the space of a fortnight, and his pain was more severe than ever; for this he took one-eighth of a grain of belladonna every five or six hours, and with considerable temporary relief. On the 24th his sight returned, and he became so much freer from pain that his medicines were omitted. On the 9th of November he was entirely free from pain, and any urine secreted was voided through the natural passage. Two worms were brought away by stool, and a third was found in the bed next morning. Still he became gradually weaker, and on the 15th death relieved him from any further earthly suffering.

Examination of the body forty hours after death.—Great emaciation, externally and internally; the omentum was wasted almost to nothing; the whole intestinal canal discoloured and presenting traces of inflammatory action, but the colon and rectum much more so than the small intestines; mesenteric glands enlarged; the *appendix vermiformis,* instead of occupying its natural situation, had descended into the pelvis, and about an inch from its termination was firmly united to the superior and lateral portion of the bladder a little above the junction of the ureter with this organ;* the bladder itself was smaller than natural, and firmly contracted at its lower part upon a hard substance, which, on laying open the cavity, proved to be a calculus of the triple phosphate form, measuring in length one inch and six-tenths, and in circumference two inches and

* See figure 1.

nine-tenths ; the parietes of the bladder were much thickened, and on laying them open about half an ounce of purulent matter escaped ; the calculus was firmly pressed upon the internal orifice of the urethra, preventing almost entirely the flow of urine in that direction ; the mucous coat of the bladder was ulcerated in two places, and on the mesial side of the opening of the right ureter, and a little above it, were two fistulous openings, the septum between the two being very slight, communicating with the interior of the *appendix vermiformis* ;* both ureters were much enlarged and inflamed, and both kidneys larger than natural, and so completely filled with pus that scarcely a healthy portion was discernible.

The calculus, very truly represented in figure 2, on being carefully divided, displayed in its centre a large pin,† which satisfactorily accounts for the singular appearances above detailed. The poor boy must have swallowed the pin, which, after traversing the small intestines, formed a lodgment in the *appendix vermiformis* ; here the irritation caused by it must have given rise to inflammation and adhesion of the process to the exterior of the bladder, and subsequently, by ulceration, to the passage of the pin into the urinary bladder, where it formed the nucleus of the calculus discovered after death, though not detected during life. The fistulous communication with the bladder will likewise very readily account for the voiding of the urine from the anus, the natural orifice being closed by the calculus ; and also for the passage of the worms through the urethra on the several occasions mentioned.

* See figure 1. † See figure 3.

ARTICLE VI.

CASE OF

TUMOUR DEVELOPED IN THE MIDST OF THE CAUDA EQUINA.

BY W. W. FISHER, M.D.,
Downing Professor of Physic, Cambridge.

The case I am about to communicate came under my observation in January, 1840. The name of the individual affected was Taylor; he was thirty-eight years of age, was a tailor by trade, and had been intemperate in his habits for some time previous to the commencement of his illness. He had about three years before (i.e., in 1837,) injured, whilst riding, the lower part of the loins by the back part of the saddle, and from that period he began to suffer from pain in the lumbar and sacral regions, which was attributed to rheumatism; the pain gradually became more violent, and extended down the legs, which began to swell. He was obliged to give up work in June, 1839, and became bed-ridden in the September of the same year; he could not however lie down, but rested on his hands and knees, in which position I found him when I first saw him. He was then unable to

move either his loins or lower extremities; but he had the free use of neck, shoulders, and arms. The pain, which had formerly been chiefly confined to the region of the sacrum, was now more particularly felt across the seat, extending from one ischium to the other. There was great numbness throughout the lower extremities; and although no sensation was in the left leg or toes by touch, nevertheless he complained strongly of a feeling of heat in the parts. There was some degree of feeling, on touch, left in the right leg. The legs were very œdematous; there were large ulcerations on those parts of the knees on which he rested, yet he did not experience pain from them. He was generally sleepless, but did not suffer from head-ache; his breathing was easy, his pulse undisturbed, and his appetite good. He had difficulty in making water; and his bowels were generally confined, and at times so obstinately constipated as to resist the action of cathartics and purgative injections. An issue had been placed on the region of the sacrum, the discharge from which was thin; this was rendered of a more purulent character by the use of iron, from which he seemed to derive more benefit than from any other medicament, especially as regarded the making of water.

His death took place in May last. He had been able, about a fortnight before it occurred, to place himself on his back, after which the œdema of the legs subsided; there was however incontinence of the urine, which was at times mixed with blood. He slept better, and was even able to assist in making a waistcoat about a week before he died.

Post mortem.—Owing to peculiar circumstances I was only able to examine the back; imperfect however as the investigation was, it furnished me with a morbid product sufficient to account for the peculiarity of the symptoms, and the situation and structure of which must be a matter of interest in pathology. The sacrum seemed more protuberant than usual; this appearance however arose from the loins being more depressed. The arches of the dorsal and lumbar vertebræ and the posterior wall of the sacrum were removed; the laminæ of the lumbar vertebræ, as well as their bodies, were partially affected with caries.

Viewed posteriorly, the dura mater appeared to be in its natural state until it reached the extremity of the spinal cord; but from that point to the end of the sacrum it was wanting, so that the mass of tumours, as represented in the accompanying drawing, was exposed to view. The morbid growth extended more towards the left than the right side of that portion of the spinal canal in which it was situated. The spinal cord was cut across, about the middle of the back, and the inferior portion of it was removed; nearly the whole of the diseased mass came along with it. The dura mater was laid open posteriorly, and the drawing shows the appearance which the parts then presented. The cord appeared to be quite sound throughout. The diseased mass had a lobulated form, and was involved in the cauda equina; and although it was traversed by a few of the nerves, nevertheless the greater portion of the latter could be detached from it.

It was difficult to determine the seat of the tumour

when examined posteriorly; but anteriorly the dura mater was sound throughout; and the arachnoid membrane, especially at the upper portion of the tumour, could be traced intact between the latter and the dura mater. Here and there processes were observed to pass from the arachnoid to the diseased structure, but they were similar to those met with between the arachnoid and the pia mater in their natural state. The tumour, or rather mass of tumours, on which a great number of vessels were spread, was, as I observed before, surrounded on all sides by the roots of the nerves forming the cauda equina. The lower portion of this morbid growth (*f.*) had the form of a tubercle, of which Figure 4 represents the section. It presented several traces of vascularity in the centre, and had a scirrhous appearance; I could not however make anything out satisfactory with regard to its minute structure. The upper portions of the tumour were softer, and were involved in a fine glistening covering; sections of several portions of them* showed them to be composed of a grey, semi-transparent, jelly-like substance, infiltrated amidst reticulated tissue, and marked with sanguineous striæ, several of which appeared like true vessels.

I had not an opportunity of having any part of this morbid growth analyzed. I plunged a portion of it in pure alcohol, and as it retained its semi-transparency, I concluded it was not albuminous.

Notwithstanding the researches I have made, I have not yet been able to meet with any case on

* Figure 2, natural size. Figure 3, enlarged view of the same section.

record similar to the one just described. Amongst the many points of interest which the tumours offer, as, for instance, the region they occupy, the peculiarity of their structure, the symptoms they gave rise to, I shall on the present occasion allude more particularly to one, that is to say, the tissue in which they were developed. There can be little doubt that the disease was seated in the pia mater, a vascular web in which morbid products are more frequently formed than in either of the other membranes of the brain. I have observed in a diseased state of the pyloric extremity of the stomach, the walls of which were greatly thickened, a morbid product, which was seated between the serous and muscular layers, and of which the minute structure was similar to that of the section of the tumour in question.*

There exists a great analogy between the pia mater of the brain and spinal cord and the sub-serous tissue of other organs; and, indeed, where the former is united with the arachnoid, the analogy becomes complete. Observation has led me to consider the sub-serous cellular tissue as being more frequently than any other tissue of the human frame the seat of morbid products. I shall not however enter at length into this subject on the present occasion, but shall defer till another the statement of the facts on which this opinion is grounded.

* Figure 3.

EXPLANATION OF THE PLATE.

FIG. 1.—Posterior view of the lower portion of the spinal cord, and of the cauda equina.

a. a. a. a. Dura mater laid open.

b. Section of the spinal cord in the lower part of the dorsal region.

c. Parenchyma of the spinal cord exposed by an accidental incision of the pia mater.

d. d. Roots of the nerves forming the cauda equina.

e. e. e. Lobulated portions of a tumour embraced on all sides by the cauda equina.

f. Portion of the tumour of a whiter colour and of a denser structure than any other portion of the diseased mass.

g. A blood-vessel, apparently a vein.

FIG. 2.—Section of one of the lobulated portions, *e*, natural size.

FIG. 3.—Enlarged view of section, Fig 2.

FIG. 4.—Section of the lowest portion of the tumour, Fig. 1, *f*.

Fig. 1

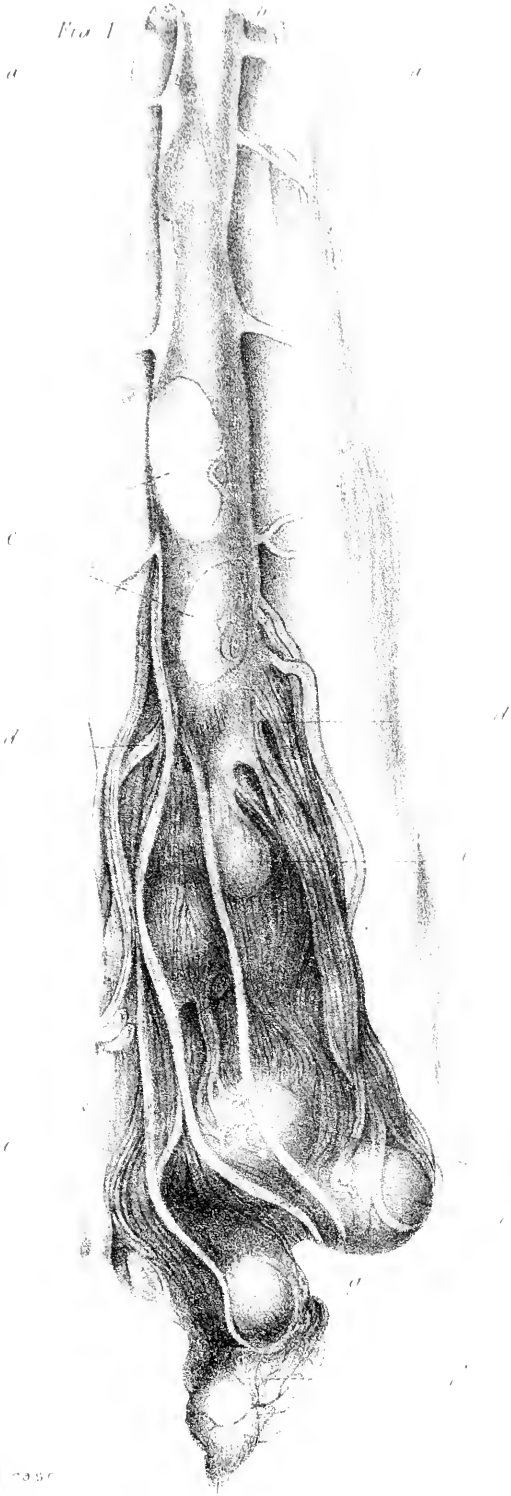


Fig. 2

Fig. 3

Fig. 4

Dr Fisher [illegible]

ARTICLE VII.

FURTHER OBSERVATIONS

ON THE

VARIOLÆ VACCINÆ,

ILLUSTRATED WITH COLOURED ENGRAVINGS FROM ORIGINAL DRAWINGS.

BY ROBERT CEELY, ESQ.,
Surgeon to the Buckinghamshire Infirmary.

THE imperfect knowledge which we at present possess on many points connected with the natural history of the *variolæ vaccinæ*, and the numerous and formidable impediments to the improvement and extension of that knowledge, demand the continuance of vigilant, patient, and diligent inquiry. The inherent and contingent difficulties which attend many of our investigations into the remote, predisposing, and exciting causes of this interesting disease, though in many respects not under control, in some measure admit of very material mitigation. The infrequency of the disease must always prove one of the greatest obstacles to the rapid accumulation of facts of a really valuable character; but there is good reason to believe that an increase of the number of competent observers will abate much of this difficulty, by leading to more frequent

detection. An increase of the number of competent observers however, without the diffusion of a greater amount of discriminating knowledge among the proprietors and attendants of the subjects of the disease, will be but an imperfect approximation to the amount of means indispensable to the success of our inquiries. The careful record of every fact bearing immediately or remotely on the points above mentioned, irrespective of any theory—the improvement and perfection of the means of diagnosis, by the study of the exanthemata of the lower animals, particularly those of the cow—and the diffusion of such knowledge, in the proper quarters, by those whose time, situation, and circumstances, will admit, seem to me to be essential to the successful promotion of our object.

With a conviction of the value of these investigations to medical science—not I trust overrated, and under the influence of the encouragement offered by this Association, manifested by the distinguished, but I fear unmerited, reception which it has given to my former observations, I am induced to offer a few additional facts which I have lately had occasion to witness, and which, from their importance, have been investigated with all the care and impartiality of which I am capable. I am desirous also of adding some additional observations, illustrative of some particulars contained in my former communication, which required time to furnish.

For the opportunity of making the following observations, and investigating and recording the facts, I am indebted to the very great kindness and

intelligence of my friend, Mr. Thomas Knight, surgeon, of Brill, who has on former occasions rendered me invaluable assistance in the prosecution of similar inquiries.

Cases of variolæ vaccinæ occurring in cows and milkers.—On Friday, the 22nd of October, 1840, my friend Mr. Knight informed me, by letter, that he had on that day seen on the hand of a patient (Mr. Pollard), aged 56, who had never had small-pox or vaccine, two broken vaccine vesicles, which the patient stated he had caught while milking his own cows, some of which he knew were affected by the same disease, and were then very difficult to milk. Mr. Pollard at the same time expressed his conviction "*that his cows had been infected from human small-pox effluvia,* to which he considered they had been exposed."

On the following day I proceeded, in company with Mr. Knight, to the farm of Mr. Pollard, in the village of Oakley, about two miles from Brill, at the extreme and north-west end of the Vale of Aylesbury, and about sixteen miles from the town of Aylesbury. We saw the ruptured vaccine vesicles, with their central sloughs, on the hand and fingers, which were apparently between the second and third week of the disease, and carefully examined the cows. The cows were ten in number: eight milch cows and two sturks. On two of the milch cows there were the vestiges, on each, of not fewer than twenty-five to thirty vaccine vesicles on the teats, and the remains of one vesicle on each udder. On two others we noticed the remains of not more

than half that number of vesicles on each; and on the fifth milch cow there was evidence of only one vesicle on the hinder part of the teat, which, being out of the way of the milker, was completely desiccated and entire, forming a characteristic blackish-brown oval crust. This crust on the teat, and two crusts on the udders of the other cows just mentioned, were the only perfect crusts observed. On the teats all the imperfect crusts had been casually and prematurely removed by the manipulations of the milkers, and, hence, were visible florid ulcerations, many of which were manifestly depressed in the centre, and *all* surrounded with the more or less circumscribed, indurated and elevated integumental boundary which marks the vaccine disease. Upon the udder of one of the affected milch cows was observed an abundance of the sub-epidemic vesicles or bullæ, which not unfrequently arise during the acme and after the decline of the vaccine disease. Three of the milch cows, although carefully and repeatedly inspected at that time and at subsequent periods, indicated no external trace of the disease. One of the sturks, not then supposed to be in calf, (but subsequently proved to have been so two months,) appeared to have several dark brown partially adherent crusts on the teats; but was very wild and intractable, and could not be caught and carefully inspected at the time. The other sturk appeared, like the three milch cows just mentioned, to have entirely escaped the disease.

After the inspection of the cows we were fortunate enough to find another milker, Joseph Brooks, aged 17, (who had had neither small-pox nor the vaccine,)

with a very fine vaccine vesicle on the right temporo-frontal region, another over the last articulation of the thumb, and a third on the radial aspect of the ring finger, all just past their acme, as the diffused areolæ had evidently disappeared. From the first vesicle we obtained lymph, and immediately used it.

In reference to the presumed origin of the disease on the cows, from small-pox effluvia, as intimated by the proprietor, we obtained some remarkable facts; but previously to detailing the particulars of his statement, and that of the milkers, it is necessary to remark that both Mr. Knight and I were aware that the small-pox had been casually introduced into the village in which this farm was situated, about the commencement of the preceding June; but this being met, on the part of Mr. Knight, by prompt vaccination, only twelve cases of small-pox had occurred up to the time when the above cows exhibited their disease. Of this number of small-pox cases the last three were, a woman, aged 40, who had been satisfactorily *inoculated* in infancy by the celebrated *Sutton*, a young child, and a woman rather beyond the middle period of life. The two cottages in which these three patients resided during their illness were situated on each side of, and closely connected with, a long narrow meadow or close, comprising scarcely two acres. The first-named patient, though thickly covered with pustules, was not confined to her bed after the full development of the eruption; but frequently crossed the meadow to visit the other patients—the woman and child, the former being in great danger with the confluent and malignant form of the

disease. She died on Monday, the 7th of September, and, according to custom, was buried the same evening. The intercourse between the cottages, across the close, was of course continued after this event. On the following day the wearing apparel of the deceased, bed-clothes, bedding, &c., of both patients, were exposed for purification on the hedges bounding the close; the chaff of the child's bed was thrown into the ditch; and the flock of the deceased woman's bed was strewed about on the grass within the close, where it was exposed and turned every night, and for several hours during the day, till the 13th of September—eleven days. On that day the above-mentioned eight milch cows and two sturks were turned into this meadow to graze. They entered it every morning for this purpose, and were driven from it every afternoon to be transferred to a distant meadow to be watered and milked, where they remained through the night. Whenever the cows quitted the meadow in question, in the afternoon, the infected articles above-mentioned were again exposed on the hedges, and the flock of the bed spread out on the grass and repeatedly turned, where it remained till the morning, when the cows were readmitted. It appears however that the removal of the infected articles was not always accomplished so punctually as had been enjoined; for both the proprietor and the milkers affirm that on one occasion, at least, they observed the bed flock on the grass, and the cows amidst it, and licking it up. The proprietor positively declares, and the milkers corroborate his statement, "that

the animals were in perfect health on their first entering this close; but within twelve or fourteen days of that event five of the milch cows appeared to have heat and tenderness of the teats, upon which, embedded in the skin, were distinctly felt small hard pimples, which daily increased in magnitude and tenderness, and in a week or ten days rose into *blisters*, and quickly ran into brown and blackish scabs. At this period, when the teats were thus *blistered* and swollen and very tender, the constitutional symptoms were first observed, viz., sudden 'sinking,' or loss of milk, drivelling of saliva from the mouth, and frequent inflation and retraction of the cheeks, staring of the coat, 'tucking up of the limbs,' and 'sticking up' of the back, and rapid loss of flesh. The process of milking was now very difficult, disagreeable, and even dangerous; and on the 14th of October, the middle of the third week, the detachment of the crusts and loose cuticle, and the abundant discharge of pus on attempting to milk, compelled the milkers to desist for the purpose of washing their hands. Soon after this period the cows became by degrees more and more tranquil as the tenderness and tumefaction of the teats subsided, and, finally, milking was performed with comparative facility;" and at the period of our visit scarcely any trouble arose in the performance of the operation, though here and there a teat seemed still tender.

Cases of casual vaccine in the milkers.—Case I.—Mr. Pollard, æt. 56, had never had vaccine. He had been, some years previously, exposed to small-

pox infection with impunity; while his companion, a young man, took the disease and died. Mr. Pollard had since that held himself exempt from risk of small-pox.

The vaccine vesicles, when first seen by Mr. Knight, on the hand and finger, had burst, the secondary constitutional symptoms were declining, and the centres of the vesicles, as usual, were in a sloughing state. The patient says, that about ten days after the discovery of the disease on the cows, he observed two itching small pimples on the site of the present ulcers, which, according to his account, ran the normal course of the vaccine vesicle; that as soon as the areolæ commenced, having felt scarcely any indisposition before, pain and tenderness of the axillary glands, with the usual constitutional symptoms, arose, and gradually increased for four or five days, but were never severe enough to confine him to the house. They had entirely ceased on the day Mr. Knight and I saw him, and the topical inflammation was rapidly departing; the vesicles were quite broken up, and a blackish brown slough adhered to their centres, their base being surrounded with an elevated induration of a livid red colour.

Case 2.—Joseph Brooks, æt. 17, a fine, healthy, intelligent young man. Had not been the subject previously of variola or the vaccine. Stated that he commenced milking on Friday, the 9th of October, and that his milking was confined to four cows, only *one* of which had the disease—from four to six vesicles on each teat. He milked those four cows occasionally, and continued to do so till the 18th of

the same month—ten days, having milked them in that period six times.* On this day (the 18th) he felt the cervical absorbent glands and lymphatics stiff and tender; and on the 20th found a pimple on the temporo-frontal region, which he could not resist scratching. On the day before that, he observed on his finger a red pimple, of the size of a pin's head; the next day, one on the thumb, very small. In neither situation was he aware of the pre-existence of any visible wound or abrasion of the cuticle. On the 21st he had head-ache, general uneasiness and pains of the back and limbs, with tenderness and pain in the course of the corresponding lymphatic vessels and absorbent glands, particularly of the axilla, which increased till the 23rd, when nausea and vomiting took place. His right eyelids became swollen, and were closed on that day; but after this period he became better in all respects, never having been confined to the house, although disabled from work. The engravings† represent the vesicles as they appeared on the 23rd, when the constitutional and local symptoms were subsiding. The vesicle on the temporal region had a well marked central depression, with a slight crust, a general glistening appearance, and was of a bright rose or flesh colour, with a receding areola; and there was an inflamed, tumid, and completely closed state of the corresponding eyelids.

On the finger‡ the vesicle was small and flat, with a slightly depressed centre, containing a minute crust.

* The milker who attended in his absence having been vaccinated by Mr. Knight with variola vaccine lymph, (with which I had supplied him,) did not receive the disease from the cows.

† See plates 1 and 2.

‡ See plate 2.

It had a beautiful pearly hue, and was seated on a bright rose-coloured slightly elevated base. On the thumb the vesicle was also flat and broad, but visibly depressed towards the centre, where there appeared a transverse linear-shaped crust, corresponding, doubtless, with a fissure in the fold of the cuticle. The vesicle was of a dirty yellowish hue, and visibly raised on an inflamed circumscribed base. Lymph was obtained from the vesicle on the temple, in small quantity, by carefully removing the central crust, and patiently waiting its slow exudation. In this, as in most other respects, it strikingly resembled the vesicle on the cow, and appeared as solid and compact. The lymph was perfectly limpid, and *very* adhesive. No lymph was taken from the vesicles on the finger and thumb, with a view to avoid any interruption of their natural course.

On the 26th and 27th, when the redness and elevation of the base of the vesicles had materially diminished, the vesicles themselves had become greatly enlarged. On the thumb and finger they were loosely spread out at the circumference, each having a dark and deep central slough. On the temple the margin of the vesicle (as on the cow) was firm and fleshy, its diameter being nearly ten lines, and its centre filled with a dark brown firmly adherent slough. In about seven or eight days, with the aid of poultices, the sloughs separated and the deep ulcers healed, leaving cicatrices like variola, deep, puckered, and uneven, which were seen on the 25th of November. The scar on the temple was nearly as large on the 5th of December as the vesicle represented in the engraving.

Vaccination with the lymph taken from Joseph Brooks.—It was directly transferred to three of his younger brothers, a lad older than himself, and two infants. The primary symptoms in his brothers and the young man, aged 19, were manifest on the seventh day, but were mild. After the appearance of the areolæ, the secondary symptoms were promptly excited, and gradually increased till their decline. There was nothing remarkable in the character of the vesicles till the full development of the areolæ, when they became remarkably broad and flat, spreading outwards, turgid with lymph, bursting their walls, and, like those from which they were derived, followed by sloughs and deep slowly healing ulcerations. In the infants, fine and healthy, with thick compact skins, the usual fretfulness and feverishness appeared on the evening of the sixth or seventh day, remitting in the morning and increasing in the evening, in proportion as the areolæ advanced, and declining with them. As usual, nothing remarkable before the eighth day in the appearance of the vesicles: in one the vesicles burst and sloughed; in the other they remained entire, were fine and satisfactory, leaving characteristic crusts, and moderately deep finely reticulated cicatrices.

In the subsequent transfers of the lymph the effects varied according to circumstances. In infants, with tense thick skins, the vesicles, though active, were perfectly free from inconvenience, yielding fine "tamarind stone" crusts and regular scars. On children and adults, where the skin was thin, vascular, or irritable, upon the full expansion

of the areolæ, the vesicles spread out broad and flat, and, yielding to the distending influence of their *diluted* contents, burst and terminated in sloughs, more or less deep, followed by a corresponding extent of ulceration; but where the skin was pale and thick, and especially if the patients were also pale and dark in complexion—conditions in every respect most suitable for the use of *new* lymph—then the vesicles were more compact, restricted, bold, and better defined, with proportionately less areola, and often not distinguishable at any period of their course from those induced by ordinary lymph. Here the crusts were of the ordinary size and form, and the cicatrices of the common depth and extent.

The constitutional symptoms varied not less. In many *infants* the *primary* were scarcely noticed; the *secondary*, proportioned to the texture and vascularity of the parts, the local inflammation, and the temperament of the individual. In *children*, as usual, both were more frequently and more early noticed: the *primary*, on the sixth or seventh day; the *secondary*, at an early period, were marked with vomiting, diarrhœa, much fever, and occasional delirium. In *adults* the same early indications of constitutional symptoms, though not always, were often evinced; and during the *secondary*, as usual, much general complaint was made, some few keeping their beds a day or two. But the primary and secondary constitutional symptoms were comparatively mild in many individuals of the three classes above mentioned.

At the expiration of three months several patients

were tested with variola, by inoculation, with no other than a trifling fugitive inflammation at the point of insertion, or a small vesicle resembling the modified vaccine in form, size, and course, containing a *limpid adhesive* lymph, raised on an indurated base, and terminating on the eighth or ninth day in a small, hard, blackish brown crust, and unattended throughout its course with any constitutional symptoms.

Remarks.—The cases of natural vaccine above detailed are interesting in many respects, and we were particularly happy in having to collect the various facts connected with them from persons possessing more than the usual share of intelligence and acuteness of observation. The proprietor of the animals, though occasionally practising as the village cow-leech, had not the remotest idea of the medical theories concerning the nature of the disease, and consequently had no prepossessions in favour of the opinion he spontaneously suggested on first exhibiting his hand to Mr. Knight. He alleged as reasons for this opinion, first, the fact of the state of perfect health in which the cows entered the close; secondly, the existence of variolous effluvia within its precincts; thirdly, the time which elapsed from the exposure of the cows to such influence and the appearance of the vaccine disease on them; and, fourthly, the simultaneous or nearly simultaneous attack of all the patients.* I need scarcely say that we spared no pains in our en-

* Both he and the milkers declare that the whole of the cows were certainly affected within less than three days.

quiries as to the validity of the statements in support of this opinion, and the accuracy of the facts upon which they were based. Hence the information here detailed was not deemed admissible till after thorough investigation and minute inquiry, by *repeated personal visits* to the scenes and the sources of it.

There could be no doubt of the existence of variolous effluvia in the site and precincts of the close quite adequate to the propagation of the disease among human beings, had they been exposed; but whether sufficient to excite the vaccine in cows I really cannot pretend to say, having failed myself in attempts to infect *two* or *three* such animals *at a time*, with means not less potent, and under a closer atmosphere. The period at which the disease was stated to have been developed on the six animals was certainly remarkable, and called for careful scrutiny. The result of close and repeated inspections of *all* the cows, both at our first visit and several subsequent visits, was a conviction of the correctness of the alleged simultaneous occurrence of the disease on all the subjects at the time specified, a circumstance which increases the probability of the operation of *one* common cause. And here it is necessary to observe that, although the vaccine disease is sometimes epizoötic, and attacks one or two cows, *at different farms*, about the same time, I never remembered to have seen so many cows simultaneously attacked in one farm as in this instance. Most frequently we find the disease break out on a single cow, and spread slowly, by direct contact of the hands of the milkers, through

a dairy. It is also important to add that the vaccine was not then epizoötic in the Vale or neighbourhood, and of this fact I had the best possible assurance. The *aptha epizoötica,* as the disease is called, was then prevailing, and my knowledge of the state of the dairies in general, both from daily inquiries and frequent personal inspection, for the purpose of observing the phenomena of that disease, was more perfect than it had been for at least twenty years; in fact I had altogether despaired of seeing the vaccine disease for some length of time, in consequence of the existence of the epizoötic.

Another circumstance too requires to be particularly noticed in estimating the value of the opinions put forward by Mr. Pollard, and which might be adduced in support of his reasons of belief. It is the fact of the occurrence of the vaccine disease on a young sturk, which of course could not have been induced by those casualties which commonly propagate it amongst milch cows, but simply by the cause which originated the disease in the other five animals, whatever that may have been. The sturk is not considered liable to the vaccine, at least so it is inferred in this neighbourhood, because no one has ever seen the animal affected by it. I have shown however that by inoculation the disease may be communicated to the sturk, and I have also adduced several reasons for its not having been otherwise detected on that animal.* In Germany however I believe it has been, on two or three occasions, seen on the sturk without probable contact. From personal observation I know also that both the sturk

* *Transactions,* vol. viii., p. 299.

and heifer are liable to a vesicular disease of the teats and udder, which is very common on milch cows in this neighbourhood. I have called it the *verrucous* or *wart* vesicle, and shall describe it at a future period. I will merely mention now that, although occasionally these vesicles are as large as vaccine vesicles, most commonly they are far below the average size of them. They commence on the teats or udder as small red vesicles, sometimes scarcely perceptible on a coloured skin, raising the cuticle, with an amber or saffron coloured lymph, which concretes into a solid mass, into the base of which vessels shoot, by which it becomes organized, and continues to augment and grow, as a prolongation of the cutis, in the form of a wart; these warts vary in shape, according to the shape and size of the vesicle from which they spring. Now and then both small and larger verrucous vesicles are covered with a thin flimsy crust, of a light yellowish or saffron colour, never like the solid blackish brown crust furnished by the vaccine vesicle. Hence, although I could not obtain at the time so close an inspection of the teats of the sturk in question as I wished, I could not hesitate to pronounce the crusts vaccine, from the size, shape, and colour. About a month after the occurrences above described, this sturk having been accidentally found in the cow-house, and seeming quiet, was carefully examined by the proprietor's intelligent nephew, who found the teats covered with numerous scars as large as horse-beans, and bearing, as he said, an exact resemblance to those on the other cows. I had an opportunity myself, nine months afterwards,

of inspecting these scars, and comparing them with those on the other animals; I could see no difference.

Whatever may have been the source of the vaccine in these animals, the phenomena attending it, so correctly described by the proprietor and the milkers, and the facts observed by us, are very instructive, and need a few remarks. The ages of the cows affected were *two* four-years, and *three* seven-years. Of the three milch cows which remained free from the disease *two* were three-years, and *one* probably four-years-old. That they really did escape was obvious enough, as far as careful inspections, from time to time, of the teats and udders could enable us to declare; and the total absence of any symptoms of indisposition removed all doubt of the fact. Now these three milch cows were shown to have been equally exposed to the same primary cause as the others, and, as we ascertained, were exposed also to the chance of casual inoculation in the process of milking; yet they escaped. These and similar facts, which have often fallen under my notice, induce me to believe that there exists among cows, as well as among men, different degrees of susceptibility to the vaccine. I never recollect to have seen a dairy visited by the disease in which two or three cows, equally exposed to casual infection, have not escaped. Moreover we know, by direct experiment, that some cows may be *vaccinated* or *retro-vaccinated* with facility; others with the greatest difficulty; some not at all. The phenomena of the disease were well described by the milkers. The primary or incursive symptoms so slight as scarcely to attract

notice, as is most commonly the case; though in two instances—one some years since, the other more recently—there was considerable precursory indisposition. The heat and tenderness of the teats, with the presence of *small hard pimples, deep in the skin,* which gradually increased daily, with their inevitable and obvious concomitants, *for more than a week* before "blistering" or *acumination,* were not less indicative of the vaccine than the correctness of the observers. At this period—the acme—they notice the constitutional symptoms, developed in all their intensity, and describe them with more than ordinary accuracy and precision; they certainly were more clearly marked than usual. Many contingencies however affect the development of the incursive and secondary symptoms; the chief are the season of the year and the actual condition of the animal, and the quantity and quality of food. The retraction and expansion of the cheeks is not always noticed by the careless unobserving milker; nor is the drivelling from the mouth. This last sign was so well marked that the proprietor feared the animals were about to be attacked by the aphtha epizoötica, (which was then prevailing in the adjoining farms,) where it is one of the first signs noticed, though not actually the first in existence, and depends on positive inflammation and vesication of different parts of the mucous membrane of the mouth. In the vaccine disease however this is not the case, at least here, where the disease is generally mild; for no vesicles are observed in the mouth, nor difficulty of mastication. The drivelling appears to be the effect of topical irritation in the seat

of the disease—the teats and udder; for it is very well known that such a symptom does attend similar degrees of irritation from other causes and in other parts. The secondary constitutional symptoms were noticed in all the patients, including the sturk, and were proportioned in each to the amount of topical irritation. It was remarked however that the appetite seemed very little impaired, notwithstanding the wretched appearance of the animals, during the presence of the constitutional symptoms, and the sudden and notable loss of milk. To form some idea of the quantity of milk lost, we ascertained, from the dairy records, that in the first week of indisposition, six pounds of butter were deficient; in the second week, two pounds; in the third week, none. These may be deemed trivial and unimportant particulars, but their utility will be presently shown.

It is hardly necessary to observe that a correct knowledge of the vaccine disease on the cow in its *early* stages is of much importance in many points of view, and that too much pains cannot be bestowed on the minutiæ of the local phenomena by those who are desirous of acquiring the means of a safe and accurate *diagnosis*, if it be important to avoid the inconveniences of propagating from spurious vesicles, or to prevent disappointment when non-contagious lymph is erroneously employed. But to those who think themselves better engaged in investigating the nature and causes of the disease than in hunting after new lymph, a careful study of the latter or ulcerative stage will be not less interesting and productive, and more so than many would pro-

bably suspect, though at times it must be admitted the difficulties attending this part of the diagnosis are scarcely to be surmounted with safety and satisfaction. In this place I can only point out the general characteristics of the ulcerative stage, in so far as it is necessary and practicable for comparison at a future period with the ulcerative stage of some other vesicular diseases. It must be obvious that in proportion to our ability to form a judgment for ourselves, *by these means,* concerning the nature and stage of the disease whose history we may be desirous to investigate, and of which we may be able to acquire very interesting facts, in that proportion is our history perfect, and our information valuable. From the nature of things we are indeed compelled to depend too much and too often on the imperfect observations of ill-informed persons, and therefore we should cultivate every opportunity of rendering ourselves less dependant on such sources. The general points of recognition of the vaccine disease in its other stages, as already indicated, being borne in mind, we shall often be able to remark some of their vestiges in the stage of ulceration; but the extent to which we shall be able to do so, in individual cases, depends upon many contingencies. As there is nothing discriminative in the site, figure, or size of the vaccine vesicle, it will follow that when all vestiges of cuticle and crust are removed, in the stage of ulceration, we can then derive no aid in our diagnosis from the mere consideration of these circumstances. It is true that the distinct or solitary vaccine vesicle never attains the extreme magnitude, nor assumes the irregular

shape, not unfrequently acquired and exhibited by some other vesicles in the same parts, but, on the average, falls far below in size, and is most commonly more perfect in form than such vesicles; yet, in many instances, the former are equal in size to some of the latter, and whenever vaccine vesicles are coalescent and ultimately confluent, or have been closely and thickly grouped with intervening erysipelatous vesications, the resulting ulcerations are of considerable magnitude, and most commonly irregular, and consequently cannot by such characters be distinguished. Our main reliance in forming a diagnosis in the ulcerative stage of the vaccine disease must then be on the phenomena and effects connected with the seat and elementary character of the eruption.

Vaccine ulcers are generally distinguishable by a rounded elevation, more or less manifest, of their outer margins, and a circumscribed induration of greater or less extent, of their base, with a proportionate depression in their centres of deeper ulceration, sometimes caused by a slough. But these characters are obviously influenced by several circumstances which must be taken into account when attempting our diagnosis; the principal are—stage of the disease, texture of the tissues, site of the ulcers. It is necessary to know that in the early ulcerative stage of the severer forms of some other vesicles nearly as much induration, &c., is occasionally found, especially if the texture of the tissues is lax, and much mechanical irritation has been inflicted. If we can be positively assured that the above-mentioned diagnostic conditions have existed

in any given ulcer for three or four weeks, or even longer, especially if it be removed from *severe* casualties, we may fairly presume that it is vaccine; and this presumption will be strengthened, if, under the circumstances, the ulcer be small, for such sized and circumstanced ulcers of most other vesicles, being for the most part superficial and sub-epidemic, speedily heal. But as the texture of the parts in which vaccine vesicles appear varies so much, and as their seat is not uniform in depth, and as elevation of the margin and induration of the base and depression of the centres of the consecutive ulcers are sometimes merely questions of degree, (since time or stage is not always determinable,) it is clear that uncertainty in judging of an individual ulcer must now and then happen. Out of this difficulty we often escape by finding a group of characteristic ulcers on the same animal, or a series of animals, clearly infected one from another. And when we have an opportunity of inspecting ten or twelve, to say nothing of thirty or forty subjects, we seldom fail to detect on some of them the elements of a safe and correct diagnosis, as late as the fifth or sixth week. Such condition of parts very rarely occurs in connection with ulcers resulting from other contagious vesicles, except on peculiar subjects, where the subcutaneous cellular tissue has suppurated and sloughed, and the cicatrizing ulcer has a puckered surface and indurated margin. Most commonly this result is confined to the first subject attacked, which continues also to furnish a succession of milder vesicles for four or five weeks. It must be borne in mind however that the vaccine ulcer also is found

coexistent with small superficial vesicles or bullæ, both on the teats and the upper, back, and hairy parts of the udder, as in one of the above subjects at Oakley; of the same nature and possessed of the same harmless contents as the vesicles and bullæ which appear (at the acme, or on and after the decline of the vaccine,) on the face, trunk, and limbs of children in high health, and in a few adults with irritable skins.*

These remarks, arising out of the above circumstances, which to my mind are not altogether destitute of interest and importance, will not, I trust, be considered ill-timed or misplaced; and I will merely add that on our visiting and inspecting these cows on the 25th of November following, more than two months after the outbreak of the disease, we found on some of them a few superficial irregular sores, but all character was gone. The scars were pale and smooth.

I must not however, in spite of the length of the above remarks, omit to give a brief statement of what had befallen the above animals between this

* A few months ago I had vaccinated a remarkably fine, florid, plump, vivacious infant, aged eight months, with an active lymph, about eighty removes from the cow. At the acme of the areolæ of the two vesicles nearly the whole surface of the skin of the face, trunk, and limbs, was suddenly covered with large and elevated erythematous patches and spots, which speedily became surmounted with vesicles and *pemphigoid* bullæ of various forms and sizes, exciting considerable and intolerable irritation; but this was not all, for nearly the whole of the mucous membrane of the lips, cheeks, mouth, and fauces, as far as the eye could reach, was affected in like manner; the whole exhibited a most deplorable sight, and certainly not without danger. Five or six weeks elapsed before these vesicles and bullæ ceased to appear, and the child was restored to comparative health and comfort.

and our last visit, because the particulars involve pathological facts of considerable value, and, as far as I know, are of some novelty. We were informed that on the 14th of November all the animals, including the sturks, were attacked with the *epizoötic aptha*, which had long prevailed in the Vale, and for some weeks also in the village. The difference in the nature and phenomena of the two diseases was well marked, and the comparative severity of their constitutional effects not less striking. It would be out of place here to enter into a detailed description of the epizoötic aptha; but as there are circumstances attending the development of this disease which contribute to the elucidation of some of the obscurities of the incursive phenomena of the vaccine, I shall in a very few words state the chief symptoms of the former for the purpose of comparison and explanation. This epizoötic seems to be a specific febrile eruptive disease, with catarrhal and rheumatic characters, comprising a cold, a hot, and a critical or eruptive stage. Its invasion is generally sudden. The cold stage is very short—a few hours—*often unobserved;* the stage of febrile reaction is quickly followed by patches of inflammation on the mucous membrane of the lips, gums, cheeks, tongue, and fauces, and about the nostrils and mouth, with congestion of the conjunctiva. These red patches, which are often overlooked or rarely observed, quickly run into irregular vesications or bullæ, containing a limpid pale amber-coloured fluid, and are attended with profuse salivation, difficult and even temporary inability to masticate, with proportionate constitutional dis-

turbance. Similar vesications are often seen on the teats, especially on the involutions of the skin at their apices, also on their bodies.* Still more frequently they are seen on the skin where it joins the claws, as well as on the interdigital membrane, whence they often extend under the horn, creating much mischief and causing excruciating pain by its detachment, &c.; but all these parts are seldom equally affected in the same subject. The constitutional symptoms continue for four or five days, when the topical irritation abates, and mastication is restored. It attacks all ages, and is often suddenly fatal to the very young.† In the milch cow there is a notable diminution of milk, arising, in the first instance, from fever; secondly, inability to masticate—for the appetite soon returns or is not long absent; and, third, topical irritation. Now in the milch cows at Oakley there was this manifest difference in the severity of the constitutional impression produced by this disease—the aptha epizoötica—indicated by the greatly diminished secretion of milk; the quantity of butter lost in the first week was thirteen pounds; in the second week, seven pounds The suddenness of the invasion of the disease, as well as

* Inflammation and suppuration of the mucous lining of the milk ducts and reservoirs is not unfrequent, and too often subsequent *mammitis* and all its consequences.

† In these cases of sudden fatality, and in some others of longer duration, the *post mortem* appearances were chiefly excessive pulmonary and cardiac congestion. In an *ox* which survived the acute stage, but wasted with *hæmaturia*, and was ultimately killed, the whole of the subcutaneous cellular tissue was occupied by patches of *purpura hæmorrhagica*. The sub-serous tissues of the lungs and costal pleuræ, and the sub-serous and sub-mucous tissues of the fourth stomach, small intestines, and bladder, were in the same state; liver softened.

its severity, were demonstrated by the fact that on the morning of the 14th, the day of attack, the usual quantity of milk, "*two bucket-fulls,*" were obtained; but, in the evening of the same day, "*scarcely a quart.*" At this time the salivation, erection of the hair, "tucking up of the limbs," &c., were obvious enough, though in the morning—an interval of eight or nine hours—no symptoms of illness were observable. The loss of flesh also was greater, and the animals were longer out of condition; but the season of the year was not without its influence in this respect, as well as in the restoration of the secretion of milk, which was then hopeless.

In respect to the casual vaccine in the milkers.—It is difficult at all times, for obvious reasons, to determine the precise period of incubation of the disease; and we know also, by direct experiment,* that the stage of papulation is often later in *primary* than in subsequent vaccinations. Judging however by the period of cessation of the *secondary* symptoms, and the decline of the areola on the 23rd, it seems not improbable that, in the case of Brooks, the *primary* symptoms, which were first felt on the 18th, were manifested on the sixth or seventh day of infection. The same may probably be said in the case of Mr. Pollard. Be that as it may however, it is quite clear that in both cases we have again additional evidence of the correctness of Jenner† concerning the mildness of the symptoms, under such circumstances compared with the secondary or

* *Transactions*, vol. viii., p. 344.

† *Further Inquiry*, p. 99.

topical symptoms. The vesicle on the temporo-frontal region in Brooks was produced, in all probability, by the casual application of the infected hand during or immediately after milking, or the resting of that part on the side of the cow which he might occasionally have touched in his endeavours to save his milk pail from the restive movements of the animal. He thought he had scratched a pimple on this part; but it appears the pimple in question was really the vaccine pimple. It seems to have run a parallel course with the vesicles on the thumb and finger. It certainly is not necessary that there should have been a visible breach of surface, from what we know in these two cases, and not unfrequently observe among milkers, who not only become infected themselves from the cows, without any known wound, but convey the infection to their wives and families, on whom the results appear on parts where there is no probability of such breach of skin.* The bursting and sloughing of the vesicles on the hand and fingers of the milkers is partly the result of the acrimony of the lymph, partly a consequence of the organization of the tissues affected. I have never yet seen a crust on the hands or fingers of such persons, but always the condition of parts here described. The slough from the vesicle on the temple was the largest I ever saw; but even here the *secondary* symptoms, it will be observed, were by no means severe.

* Not long since I saw a wife and five children labouring under a *pustular* disease of six weeks' standing, and infected by the father, who had caught the disease from the cow, which was in a terrible condition. It was of the character of ecthyma, but communicable, affecting the face, trunk, and limbs, and could be propagated by inoculation.

In the subsequent removes of the lymph we again observe the same mildness of the primary symptoms, and the same average uniformity in the period of their approach, the variable intensity of the secondary symptoms, and the extent to which the special organization of the individual tissues influenced the development of the vesicles, and how much age and temperament, in conjunction with these accidents, determine the amount of the attendant constitutional disturbance. We see also that in some cases it was very difficult to distinguish the local and general effects of the lymph from those of the *variola vaccine* lymph, which was obtained by experiment in February, 1839, and which had been in constant use from that period.

Cases of variolæ vaccinæ occurring in cows and milkers at the village of Dorton.—On Wednesday, the 2nd of June, 1841, my kind friend, Mr. Knight, brought with him to Aylesbury, for my inspection, a young man with two fine casual vaccine vesicles on the left hand, which he had caught from milking some cows at his master's dairy, in the village of Dorton. When Mr. Knight first saw the boy's hand, the day before, he remarked the areola was commencing; and then ascertained that other milkers had been affected, and that the disease had been prevailing in the dairy for some weeks. At the time the hand was presented for my observation, it exhibited a fine specimen of casual vaccine just before the acme, the areola not having arrived at its full expansion. The boy was then under the influence of the secondary symptoms, and being unable

to work, I prevailed on him to remain at Aylesbury that drawings might be taken of the vesicles in all their subsequent phases, and the phenomena, both local and constitutional, more carefully noticed, as I had done in the former case of Joseph Brooks; but I must defer the description of the present case of Joseph White till I have detailed the particulars of our visits on the same day and at subsequent periods to the dairy alluded to.

On our arrival at Dorton, about twelve miles to the westward of Aylesbury, at the dairy of Mr. Tompkins, we found cows in all stages of the vaccine disease, and abundant evidence of its existence there for at least three months. It was a large dairy farm, though at the time there were not more than forty-eight cows in milk; and there were three sheds for milking at different parts of the farm. The disease had visited, in succession, all the sheds, and we found that only three milch cows had escaped the contagion, to which all had been equally exposed. It had evidently existed in very different degrees of severity, in different subjects, from first to last; for we found many of the cows which had been attacked at an early period, with much severity, perfectly well, with depressed and puckered scars; and many others, affected at a much later period, with smooth uniform scars; and there were some still troublesome to milk, for the most obvious reasons, that had been ill four and five weeks. A careful inspection of all the animals enabled us to furnish the following particulars as to the state of the dairy, and enabled us, at the same time, to form an opinion concerning the probable duration of the disease therin. We noticed:—

1. *Cicatrices, perfect:* a few irregular, puckered, and uneven, but in general regular and well-defined; oval or circular, of various sizes, some scarcely perceptible, others as large as a chesnut; their outer margins slightly elevated, and gently rounded off, and their bases a little indurated. On a coloured skin the *whole* of these parts were obviously without pigment.

2. *Cicatrices, imperfect:* some irregular and puckered, but most with small, florid, granulating, depressed centres; *imperfect,* with small, bloody, black, thin, flat crusts in their centres; *imperfect,* with small, brown or blackish brown, thin, secondary or tertiary crusts in their centres. In most of these cases the elevation of the rounded margin and induration of the base was generally more marked, especially when large and irregular.

3. *Ulcers, granulating,* of all sizes; others *partially covered* with thin irregular incrustations of a bloody black colour; all having pale, more or less rounded, margins, and hard bases.

4. *Crusts:* large, flat, dark brown, *secondary,* many covering coalescent ulcers; large, flat, dark brown, *primary,* covering interfluent vesicles, with corresponding appearances of the margins and bases; long, oval, thin crusts, not distinguishable from crusts of spurious vesicles, but by the often repeated condition of the margin and base to which they adhered.

5. *Vesicles, passive,* but not desiccated; *passive,* and in progress of desiccation; *passive,* and recently desiccated. Some in all these states on the same animals. *Sizes,* smaller than half a vetch, or larger than an orange pea.

The parts chiefly affected were the *bases* and *bodies* of the teats; around the former, on many cows, the vesicles had been very numerous; on the latter, in many instances, they had been thickly grouped, often confluent. In two cows vesicles were found on the *apex* of the teat; in one of them the inflammation and swelling of the vesicle had obstructed the termination of the milk tube, and caused much pain and difficulty in milking. In several cases there had been large vesicles on the *udder,* near the bases of the teats, many of which, at the time of inspection, were covered with light or dark brown crusts, eight or nine lines in length; some others with thin and secondary and blacker crusts, with characteristic margins. In one of the cows which had been severely affected for not less than six weeks, as was manifest by the swollen and tender teats, full of imperfect and puckered cicatrices, with very hard and elevated margins, surrounding deep, irregular, and waving fissures, we observed a sub-epidermic, half desiccated, half broken vesicle, as large as an almond, containing some light amber-coloured fluid, which was without any elevation or induration of the base, or the slightest degree of tenderness. It had arrived at that stage, in three or four days, from a reddish slightly raised spot or pimple, as had several similar vesicles before it, and as did another about a week afterwards, while the heat and tenderness of the teats continued. After these had subsided no more of these vesicles or bullæ appeared, as far as I could learn. On the farm we observed sturks and dry cows free from the disease, although they had con-

tinued to graze and herd with the milk stock during the whole period of its duration. The drivelling from the mouth, the inflation and retraction of the cheeks, "dry rumination," staring of the coat, sticking up of the back, &c., had been noticed in several of the subjects, particularly those which had been severely affected. But no loss of appetite amongst any of them had been observed by the milkers; nor had the proprietor detected any material diminution of the quantity of milk. In this respect, and in the comparatively trifling and temporary influence on the general health and condition of the cows, they afforded an agreeable contrast, in the recollection of the proprietor, with the injury he and most of these cows had sustained by the *epizoötic aptha*, with which they had been affected many months before—about the autumn of the previous year. Here, as in many other dairies, examples of two at least of the evil *sequelæ* of this disease had occurred—protracted lameness and loss of condition from sinuses of the hoofs; and secondly, inflammation and consequent partial or complete loss of the functions of the udder.*

In prosecuting our inquiries relative to the period when the disease was first observed, and as to the subjects on which it probably first arose, we were not so happy as at Oakley. There had been

* In several instances of this disease, though the *milk* was greatly diminished in quantity, the *cream* was considered to be relatively more abundant, and the *quality superior*. In other instances however both pus and blood were blended with the milk, probably from inflammation and suppuration of the mucous membrane of the ducts and reservoirs. The former were often obstructed (needing constant attention and relief) by incrustation of their extremities, and pus and blood were often the precursors and accompaniments of the milk.

changes and interchanges of milkers; there were three places of milking; there had been changes and interchanges of the animals to and from the three sheds, all creating difficulties which the accustomed carelessness of observation of ordinary milkers did not enable us satisfactorily to surmount. Although the milkers and proprietor all agreed that the disease first appeared in the "home" shed, and was by degrees propagated and conveyed to the cows in the other two sheds, yet some of them frankly admitted that the disease had been in this shed some time before they suspected it, a circumstance which we have before stated as of frequent occurrence. Others thought that they first observed the disease some time in February on three cows which grazed together in a separate close, but were milked in the "home" shed.

Now it was curious enough that Mr. Knight had been in attendance on a young man who, arrived from London, had fallen ill with modified small-pox. The patient was sent on the 26th of December previous from his home, situated on this farm, to the parish pest-house, where he remained a month. We could not ascertain, however, whether during that period he had left the house for air or exercise; it was believed that he had not. After this period, and when convalescent, he certainly did go among the cows, and was seen in February at the "home" milking shed. Beyond this, we could obtain no other information that could be relied upon; and the time that had elapsed, added to the circumstances and difficulties above enumerated, made further satisfactory investigation utterly hopeless.

Cases of casual vaccine in the milkers at Dorton.—We found two milkers had received the infection in a mild and modified form, both having been formerly vaccinated.

A man, aged 40, who had been vaccinated twenty years previously, on the present occasion was infected through a puncture which he had accidentally inflicted some time before with a pointed steel instrument. Some swelling and glandular enlargement, with early constitutional symptoms, attended the development of the modified vesicle; but there was no remaining vestige of the latter on our visit. Another man, aged 32, who had been vaccinated thirteen or fourteen years before, had on this occasion some modified vesicles, which gave him very little local or general inconvenience; they also had disappeared before our arrival.

Case of Joseph White, æt. 18; fair complexion, thin skin. Had never before had variola or vaccine. He had not been long engaged in milking at Dorton before he received the infection; he first noticed the pimples on the thumb and dorsum of the left hand on the 25th of May. On the 30th, the sixth day of papulation,* he first felt the mild constitutional symptoms and the axillary swelling and tenderness. The next day these symptoms increased; but on the following day, the eighth of papulation, they abated; yet, as his hand was more painful, and he found himself incapable of work, he called

* From our inability to determine the precise period of infection, we are obliged to reckon from the earliest period of recognized papulation.

on Mr. Knight for advice. Lymph was then abstracted and used by that gentleman; the areolæ were just commencing. On the 2nd of June, the ninth day of papulation, he came to Aylesbury, when the following appearances were observed. On the side of the thumb,* between the root of the nail and above the last articulation, was a flat vesicle, raised on a hard, red, tumid base. The vesicle was of a dirty white hue, with a slight central *discolouration* rather than *depression*, and a pale red areola extended around the vesicle and beyond the last joint of the thumb. On the back of the hand there was a smaller vesicle, of a different colour and character; it was visibly raised, overlapping at the outer margin, and depressed in the centre, on a less circumscribed but obvious base. The vesicle was of a light flesh-colour; its central crust dark brown, and a moderate light rose-coloured areola, and some tumefaction surrounded and raised the whole. A small red imperfectly vesiculated pimple was seen on the left cheek—noticed by the patient now for the first time. The axillary glands and absorbent vessels were very tender; and though early in the morning the patient felt generally better, in the evening there was increase of all the symptoms.

June 3rd, tenth day of papulation.—To-day worse in all respects; both vesicles considerably enlarged, and the areolæ much increased.† There was considerable tumefaction of the thumb and the back of the hand; and the absorbent vessels, highly inflamed, could be traced by the eye into the axilla.

* *Vide* plate 3.

† *Vide* plate 4.

June 4th, eleventh day of papulation.—The vesicles enlarging; areolæ rapidly subsiding; constitutional symptoms less in the morning, but in the evening augmented; the areolæ then quite gone, but much puffiness of integuments remaining; and some red absorbents still visible on the arm. The vesicle on the face now contains a light amber crust.

June 5th, twelfth day of papulation.—Better in all respects; less tumefaction of the hand, &c.; vesicles expanding. That on the thumb was of a dull dirty white horn-colour, and it had still a dull red areola around the raised and tumid base; the centre of the vesicle, scarcely depressed, was of a dirty yellowish brown colour. On the hand the vesicle was of a dull pearly hue, though rather more glistening than before; it was much puckered at the centre and the margin; the centre was deeply depressed, and contained a small dirty yellowish brown crust. The areola was dull, but brighter than that on the thumb.

June 8th, fifteenth day of papulation.—The vesicle on the thumb* was still characteristic, though it had acquired a vesiccated margin. The vesicle on the hand† was also characteristic, though puffed exceedingly at its circumference. The vesicle on the face was now capped with a hard light brown crust.‡

June 12th, nineteenth day of papulation.—The stage of ulceration was fully developed,§ and the extent of topical disorganization was now sufficiently manifest.

* *Vide* plate 5, figure 1.

† *Vide* figure 2.

‡ *Vide* figure 3.

§ *Vide* plate 6, figure 1 and 2.

In about a fortnight the ulcers were perfectly healed, leaving scars like those succeeding variolæ or any other disease attended with entire destruction of the corium.

Vaccination with the lymph taken from Joseph White.—Lymph was taken from the vesicle on the thumb on the afternoon of June 3rd, the tenth day of papulation, and at the time the areolæ were declining. The *centre* of the vesicle was opened by displacing a dirty fragment of concrete lymph, when there issued forth a turbid serous fluid. After wiping this away, by repeated dossils of lint, the lancet was directed to the deep centre of the vesicle, where some *tenacious limpid* lymph was found; but it was impossible to extract this unmingled with some of the turbid opaque fluid. Lymph was taken the next day, when the areolæ were nearly gone; it was then chiefly turbid, though the centre of the same vesicle still contained a more adhesive lymph than the circumference, which was avoided as much as possible. After this period no further attempts were made to procure lymph, with a view to avoid damaging the vesicle; though efficient lymph might have been subsequently obtained with the exercise of proper care directed to the central seat and source of it.

The lymph taken on the 3rd was employed on three children, aged respectively three, four, and five years, florid, plump, and in good health; and on a young girl, Sarah Horwood, aged 12, selected for the purpose, with dark hair and eyes, and pale

thick skin, but perfectly healthy; she was vaccinated in four punctures.

On the eighth day her vesicles were without areolæ, were of a pale rose-colour, and yielded a *very* adhesive lymph, but in *exceedingly* small quantity. She denied having felt any indisposition.

On the ninth day very moderate pale rose-coloured areolæ; vesicles still but scantily supplied with lymph, yet that is very adhesive. Charged a few points and vaccinated her brother, æt. 2 years, and her elder sister, aged 14. She complains of tenderness, &c., in the axilla, and has some headache, but is up and engaged in straw plaiting.

Tenth day.—States that yesterday afternoon she was obliged to go to bed, and was very bad with headache and general pain all night; but better in all respects to-day. There is nothing remarkable in the size or character of the vesicles; the areolæ have coalesced, very moderate in extent, and of a pale rose-colour. The vesicles are flat, pale rose-colour, and rather brown in the centres.

Twelfth day —The areola quite gone; very little induration at the base of the vesicles, which are now completely desiccated.

The crusts were very fine, *not large,* but very perfect, and separated on the twenty-first day, leaving a moderate reticulated pit.

The three children vaccinated on the same day as the above patient did not reappear till the fourteenth day, but their vesicles seem to have been moderately active; some were broken, but none were very inconvenient, and little complaint was indicated or made by either of them till the development of the areolæ.

In the cases of *William Horwood*, aged two years, florid, plump, and sanguine, with tense skin; and *Ann Horwood*, aged 14, very dark complexion, pale, white thick skin: in the first, on the ninth day, no visible indisposition; the four vesicles had a bluish hue: in the second no indisposition, five vesicles small, no areolæ. Took very adhesive lymph, which was scantily secreted, and vaccinated her mother.

Tenth day.—W. H.: ash-coloured vesicles on a damask base, areolæ commencing, lymph very scantily furnished; no appearance of constitutional symptoms till the evening, then fever with diarrhœa. A. H.: vesicles pale flesh-colour, small; areolæ commencing; lymph very adhesive, perfectly limpid; topical but not general uneasiness.

Eleventh day.—W. H.: very feverish; diarrhœa; refuses food; deep rose-coloured areolæ; vesicles silvery. A. H.: vesicles pale rose-colour; areolæ coalescent, bright rose-colour; headache and nausea.

Twelfth day.—W. H.: vesicles bright and glistening, one blue, one partly abraded, not remarkable in size; fever, anorexia, and diarrhœa. A. H.: four vesicles burst, one has a bluish tint; areolæ declining; better to-day; engaged in straw plaiting.

Desiccation of the vesicles in the child was late—sixteenth and seventeenth days; but on the elder patient it commenced on the thirteenth day, and rapidly advanced. In the latter case the crusts fell on the twenty-first and twenty-fourth days, leaving shallow striated pits; in the former the irregular crusts fell later, and the scars were larger and deeper.

Horwood, Mrs., æt. 35, fair, florid, thin skin. Fifth day.—Scarcely any signs of papulation; yet, on the seventh day, the headache, pain of the back and limbs, commenced, with fever, and increased till the ninth day.

On the tenth day felt better; has five very fine rose-coloured vesicles, considerable areolæ, and much œdema of the arm, which increased till the eleventh and twelfth days, on both of which days the constitutional symptoms were much aggravated, and bitterly complained of; after this period merely local uneasiness.

Seventeenth day.—Flat dark brown crusts, deeply imbedded in the hard and inflamed integuments; when the crusts separated they exposed the subcutaneous cellular tissue, the corium having sloughed.

Vaccination with the lymph taken from the milker on the 4th of June was performed on two boys, brothers, aged respectively eleven and six, both very fair, with light hair, blue eyes, *red tarsi*, and consequently thin irritable skins. *On each subject* two vesicles were raised with this "*Dorton*" *lymph*, two with the "*Oakley*" *lymph*, and two with the "*variola vaccine*" *lymph*. They all advanced in both subjects, *pari passu*, and could not be distinguished either before or after the eighth day. On the younger boy slight headache arose on the *seventh day*. Both complained of local and general symptoms when the areolæ were extending on the *ninth day*. There was nothing remarkable in the size of the vesicles on the tenth day, when the disease was at the acme, and the areolæ were extensively diffused. Eleventh day: areolæ below

the elbows. Twelfth day: the elder boy had a very bad night, arm much swollen and inflamed; the younger a good night, though his arm was as bad as his brother's. After this period the general symptoms abated; but all the turgid vesicles burst the thin cuticle, the corium sloughed, ulcerated, and threw up loose spongy granulations not easily repressed.

From these was vaccinated a younger brother, of precisely similar temperament, complexion, and dermic organization. In him the vesicles were equally indistinguishable at all periods; and as more care was taken to preserve their integrity, though not completely successful in the endeavour, less topical mischief was the result. Scarcely any constitutional symptoms appeared till the tenth day; from this period till the thirteenth they were severe, attended with anorexia, fever, and delirium.

Vaccinations were continued from these sources on a series of fine, healthy, plump infants, and fine active vesicles resulted, with corresponding manifestations of the constitutional symptoms, chiefly at the approach of the areolæ, though not unfrequently a day or two before, always increased at their full development. Then the subjects were favourable and the season was warm; but it was perfectly satisfactory to all who observed them, that no visible difference could be detected between the vesicles or the effects produced by the "Dorton," the "Oakley," or the "variola vaccine" lymph, on the same or on similar subjects.

Remarks.—The occurrences at Dorton, above recited, will afford a fair specimen of the general difficulty which besets investigations connected with the origin of the vaccine disease in a large dairy. The disease, in existence some time before it is suspected by the proprietor or the milkers, has generally extended in all directions before the medical observer casually becomes acquainted with the fact, when he finds the incidents attending its outbreak so imperfectly remembered, carelessly noted, or altogether disregarded, that after all the pains he may bestow on a thorough investigation, he will too frequently conclude with disatisfaction and regret, as far as regards the chief points of his inquiry. Unsatisfactory however as many of these investigations often prove, they can seldom be altogether unprofitable. Many valuable facts are often obtained, to say nothing of the acquisition of greater precision in the diagnosis of the exanthemata of these animals, which is the only safe basis for future successful investigations. Those who cannot conform to the required "toil," may as well abandon the pursuit altogether; they will either be disappointed themselves, or mislead others. Disappointment of some kind, on most occasions of this nature, *all* must expect; errors to a certain extent, in many instances, *few* will escape. Hence the absolute necessity of vigilance, care, and caution, directed by judgment, derived from *personal* experience; and when it is recollected how few are the opportunities which occur to furnish the latter qualification, it must be obvious that we never can safely neglect to make ourselves intimately acquainted with every

particular, however trivial and common-place it may at first sight appear. The repetition of our visits is often indispensable, if only for the reinvestigation of our facts; and experience teaches us that it will seldom be unattended with advantage. We shall often discover new facts, and find it necessary to qualify and correct the old ones; and at least we shall, by this proceeding, always have the satisfaction of having done every thing that was practicable.

Although our visits and investigations at Dorton were on some points unsatisfactory and inconclusive, yet on others they were highly valuable and very instructive. Here we had an opportunity of observing, on a large scale, the vaccine disease in its later stages, under almost every variety of condition and circumstance; and were thus enabled to correct, qualify, or confirm former observations, and to make juster comparisons with the corresponding phazes, phenomena, and effects of the more common but not less contagious eruptions on the same parts; to collect, in fact, additional materials of diagnosis, or acquire increased confidence and precision in their application. The manner in which I have detailed the facts thus obtained, as well as the lengthened observations already made on the Oakley cases, will, I am sure, supersede the necessity of any further remarks in this place; and I shall now only observe that the *regular* vaccine cicatrix on the cow (though destitute of some of the characters by which it may *frequently* be recognized in man) does often furnish us, when *recent*, with some points by which it may be dis-

tinguished from the *regular* and *recent* cicatrices of other vesicles on the same parts. It will be manifest that most of the diagnostic points are involved in those appertaining to the ulcerative stage of the regular and perfect vaccine vesicle, and may, with their exceptions, be safely deduced from that source, due allowance being made for the obvious effects of the progressive changes which time produces and reveals. Hence many of the characteristic phenomena of regular vaccine ulcers may be found in the last stage—that of cicatrization—though of course in a very subdued degree. The *recent irreglar* cicatrix presents the same comparative difficulties as the irregular ulcer, and, *mutatis mutandis*, must be judged by the same means.

The cow in which the *bullæ* appeared in succession, after the decline of the vaccine, had been very difficult to milk, the teats being studded with large deep ulcers, much swollen, and excessively tender, and but imperfectly healed at the expiration of the sixth week. It was therefore not surprising that when these organs, throughout their whole cutaneous surface, were so irritable and congested, such an eruption should appear, and attend the irritating but necessary tractions of the milker. He of course considers these vesicles or bullæ as a continuance of the original disease, though nothing is more manifest than their difference in nature, seat, and course, and that they partake of the character of those vesications which often arise on the same parts when in an inflamed and congested condition from various common causes.

The difference in intensity of the constitutional symptoms and effects of the vaccine disease observed in the dairy at Dorton, as compared with those noted at Oakley, was indicated chiefly in the absence of any signal *general* deterioration of condition of the animals, and in the inability of the proprietor to discover any material loss of milk. Both these apparent discrepancies may, in a great measure, be accounted for from the following considerations:— In the Oakley dairy there was a *simultaneous* attack of nearly the whole *small* milch stock, and the attack was at the period of decline of the milk season, when the cows were daily losing succulent food; hence the secretion of milk would be not only more easily influenced, but its loss more readily detected. In the Dorton dairy, on the contrary, the mode of attack was quite the reverse—probably solitary, or nearly so; and the disease was propagated slowly by contact through a series of forty-eight cows, by the hands of the milkers, at a season too when the condition of the animals was gradually improving by a progressive increase of more succulent food. Here the probable diminution of milk in the early individual cases, often varying from other and obvious causes, could hardly attract much attention in estimating the average aggregate of so large a supply; and the less significant loss in the later cases, as the grass season advanced, would be compensated by an increase of secretion of those which had recovered. But allowance too must also be made for the difference in effect between the *primary* disease at Oakley and the *casual* disease at Dorton.

The outbreak of the *epizoötic aphtha* in both dairies was nearly contemporaneous: at Oakley only a few weeks after, at Dorton some months *before*, the vaccine. These are interesting pathological facts, and at once show the difference in *nature* of the two diseases. Other points of difference may probably be indicated at a future period. But we must not neglect this opportunity of deriving very useful instruction which may serve to guide us in our pathological investigations, particularly in regard to the exanthemata. In the great majority of instances of this epizoötic, though prevailing for many months, we find that proprietors, milkers, and attendants in general of cattle, failed to observe the preliminary stages of the disease—those preceding the critical or eruptive stage. Till the topical symptoms, the salivation, inability to feed, or lameness, were visible, no suspicion of disease existed in their minds. It was only by the intelligent veterinarian that the incursive febrile symptoms and the topical precursors of vesication were ever detected. It is true that the former are of short duration, and the latter are, for the same reason, difficult to detect; yet that both might be recognized by the intelligent and observant was abundantly evident, and is beyond dispute. Here we have another proof of the difficulty of confiding in the uninstructed and unobservant ordinary attendants of these animals, and a striking illustration also of the insidious approach and sudden aggravation of important disease in this class of animals, and of the truth and pathological value of the observations so

frequently made, especially in reference to epizoötic and enzoötic maladies, by the most experienced British and continental writers on the subject. "*Enfin,*" says M. Gellé in the conclusion of the able "*Considérations préliminaires,*" prefixed to his valuable but unfinished work,* "*les maladies de ces animaux ont presque toutes un caractère trompeur qui en impose facilement aux jeunes vétérinaires. Un calme trompeur, une espèce d' insensibilité, de stupeur même masquent les affections les plus graves, etc. etc. Les maladies charbonneuses et typhoïdes epizootiques et enzootiques, présentent souvent aussi des symptômes insidieux qui peuvent faire méconnâitre leur véritable caractère, surtout* dans leur principe ; *aussi le vétérinaire a-t-il besoin de beaucoup d' experience et d' habitude d' observer ces maladies, pour eviter des erreurs de diagnostic et de prognostic qui pourraient nuire à sa réputation.*"

The facts above mentioned, and the remarks here quoted, must teach us caution in denominating disorders of the bovine species "*topical,*" in which the preliminary indications are seldom or never detected by incompetent observers, especially when we know that both in Europe and Asia the vaccine in a more acute form is attended by palpably incursive symptoms. Our inability to discover the subjects on which the disease first appeared in this dairy, as is the case in too many instances, compels us to be content with

* *Pathologie Bovine ou Traité complet des Maladies du Bœuf, par P. B. Gellé, &c. &c., tome* 1, *p.* 43 ;—*Dictionnarie de Médecine de Chirurgie et d' Hygiène Vétérinaires, par M. Hurtrel d' Arboval ; Art. Enzootie et Epizootie ;*— also *British Cattle,* &c. &c.

the simple statements already made, with these additional remarks: that, before the disease broke out, there was no evidence of ill health in any of the animals; that, from the absence of grass at that season, they were chiefly fed on dry food; and that, as in the Oakley cases, no fresh purchases had been added to the stock, and consequently no infection could have been derived from that source. Subsequent inquiry has not enabled us to trace any direct communication between the small-pox patient and the cows at a time when infection might have been presumed from such a source, upon some individuals at least, out of a large herd of forty-eight cows. The duration of the disease on the farm for more than three months is not difficult to account for, considering the number of cows affected and the circumstances in which they were placed. Of its occurrence, at the latest, in the month of February, not only the testimony of the milkers, but careful and repeated inspection of the cows, leave on the mind of Mr. Knight and myself not the shadow of a doubt.

I omitted to state that at *Oakley*, Mr. Pollard believed the vaccine had occurred in the village twelve years before. At *Dorton*, Mr. Tompkins had not previously seen it on his farm; but he had resided there only a few years. Mr. Knight informs me that during fourteen years' residence at Brill he has several times seen the disease on the hands of the milkers from the surrounding villages, which are all situated in the midst of a large tract of pasture land, devoted almost exclusively to the dairy.

He assures me also that he has a perfect recollection that on some occasions the small-pox and the vaccine have been coexistent, in others the latter has immediately succeeded the former. In this village of Dorton, for example, the small-pox and cow-pox were *coexistent,* and *endemic,* and *epizoötic,* in the latter part of the year 1831, at which period the cow-pox was not known to prevail in the other villages. The small-pox had been in the village for some time, and was supposed to have been introduced, by infected clothing, from a distance. About the latter end of December of that year, the weather being mild and moist, both diseases were in existence on this *identical farm* before Mr. Tompkins was the occupant.*

Both Dorton and Oakley partake of the general topographical characteristics of the Vale of Aylesbury,† at the western extremity of which they are situated, forming part of an extensive dairy district. The former is rather more than a mile to the southward of Brill, the latter about two miles to the south-west; both are placed at the base of the immense triple hill on which Brill is erected, and from which there is a grand, enchanting, and extensive prospect. The soil of both villages is heavy and tenacious, yet there are some particulars in which

* On this occasion the small-pox occurred in a cottage on the farm. In the family affected, one of the members, a milker, had just recovered from the casual vaccine; he slept with those members of the family who had the small-pox, and was also inoculated with it, but with no other result than slight topical irritation and some fever for about a day's duration.

† *Transactions*, vol. viii., p. 290.

they differ. *At Oakley*, under a thin stratum of vegetable matter, lies a stiff clayey loam, about two or three feet deep. In some places gravel and loose rubble are also found. Immediately underneath lies the *impenetrable* dark blue clay. There are several chalybeate springs in the village; a very powerful spring mingles its waters with the the drainage of the village at the south-west; but these springs are far inferior to those at Dorton. Besides other fossils, at a depth of one hundred feet, multitudes of pyritic ammonites have been brought up. *At Dorton*, although there is the same general character of the soil, based upon the unfathomable blue clay, there are several very interesting points of difference in certain localities. This village has within the last four years risen into considerable repute from the existence of a powerful chalybeate spring, which has been wasting its waters in the precincts of the village from time immemorial. It would seem to be unrivalled in England, and inferior only to that of Toplitz, in Germany. The following analysis by Professor Brande will not be uninteresting. In an imperial pint are contained—

Carbonic acid Nitrogen gas Sulpuric acid Silica	a trace.
Sulphat of lime	11.5
Muriate of soda	1.4
Sulphat of alumine	2.1
Sulphat of iron	10.
	25 grains.

It reddens vegetable blues from a slight excess of sulphuric acid, which amounts to about 0.8 per cent.

The imperial pint yields an evaporation of twenty-five grains of dry saline matter. The specific gravity of the water at the temperature of 60° is 1004. The well is situated in the corner of a meadow adjoining the grounds of Dorton House, near the bottom of the hill, where a handsome and spacious pump-room is erected. To the distance of twelve acres around the well the following is the character of the superficial and deeper seated soil. Within a foot it is loam, thickly interspersed with shattered shells, inclined to moulder; still deeper by another foot, clay—short, unctuous, and friable—in layers, each layer having an intermediate body very like precipitated sulphur, or more properly "*lac sulphuris,*" to which it answers in smell and colour; numberless crystals of gypsum; and thick patches of moist brown accumulations of iron pyrites. This extends to the depth of sixteen feet. The water given up by the spring is upwards of ninety gallons per day. Dorton lies about five miles and a half north-west of Thame; twelve miles north-east of Oxford; and fifty miles from London.

In respect to the effects of the lymph obtained at Dorton.—The lymph taken from the milker on the 1st of June, just as the areolæ were commencing, Mr. Knight informed me, failed to produce any effect on some younger members of Joseph White's family and another eligible subject. With me the lymph taken on the 2nd and 3rd of June succeeded in every subject, not more than two *punctures* failing, which may be in a great measure attributed to

the precautions taken in abstracting it,—precautions which are often necessary and successful in the employment of natural and casual vaccine in cows and milkers. By this method we may often succeed, in very distant removes, with *active* lymph, especially on subjects with substantial *moderately* vascular skins and *compact* cellular tissue, even as late as the twelfth day, or after the decline of the areola; and *always* when the lymph, in the deep centre of the vesicle, is *quite limpid* and *thoroughly adhesive*. But such proceedings under ordinary circumstances are not to be recommended, for disappointment is not always the only penalty. There can be no question that the lymph of some subjects is more active and efficient at the tenth, eleventh, and even the twelfth days, than that of some others at the eighth day, and that *perfect limpidity* and *viscidity* or *adhesiveness* are infallible indications of the fact; yet I should be the last to impugn the general truth of the remark that the earlier is the more active lymph, or that there is anything but prudence, propriety, and advantage, in the general rule of taking lymph on the eighth day, or before any material amount of areola is present.

From the lymph of the Dorton milker (as well as many others I might mention at the same stage) the resulting vesicles were perfectly normal, varying only as above described, according to the quality of the tissues in which they were generated, affording another proof—if indeed such were needed—that the activity or acrimony of such lymph is not manifest on all subjects, but that in *many* instances

neither the local nor constitutional effects appear to differ from those induced by good lymph which has been some time in use; and, lastly, that we have no better standard of comparison of the local and constitutional symptoms of efficient vaccine than that originally furnished and so beautifully illustrated by Jenner—a standard to which we may at all times confidently appeal.

Within the last three years I have had occasion to observe and note the local and constitutional effects, on a variety of subjects, of more than *fifteen* different stocks of vaccine lymph, of which *six* have been direct from the cow or the milkers, and *seven* artificially produced on the cow. They have all varied in their effects, both locally and constitutionally, according to the circumstances so often alluded to; but none have lacked the essential qualities and properties, nor have any possessed them in a superior degree, to those indicated in that description and those illustrations which I have just mentioned. I have seen also as much local inconvenience, in some subjects, from the *oldest* as from the *newest* lymph.

Here I will beg to remark that the comparisons which I have thus been enabled to make with the *variola vaccine* lymph—some of which have been detailed and illustrated in my former communication, others in this—may be deemed by many, as they are by myself, to afford sufficient proofs of the identity of this lymph with genuine vaccine, particularly when so many practical observers, both in England and on the continent, have had oppor-

tunities of comparison, by employing it on many thousand subjects. But I think it right, for the satisfaction of others, to state that the variola vaccine lymph has been submitted to the test of variolous inoculation on twenty-two subjects, at various periods, after vaccination. In order that a fair parallel may be presented of the effects of this test, it will be convenient and necessary to adduce authentic descriptions of the results of variolous inoculation after vaccination at a corresponding period—within three years, as furnished by the records of the time when such test was deemed necessary, and was employed for the Jennerian lymph. Dr. Willan* has not only furnished us with many details of such cases, but has drawn up a concise summary of the results of variolous inoculation at different periods after vaccination. This I shall perhaps be allowed to quote, although his coloured illustrations will be found very interesting and necessary to be referred to. "The most frequent result," he observes, "of variolous inoculation after vaccination is a small pustule,† not attended with disorder of the constitution; but some of the following circumstances and appearances take place after it in particular constitutions:—1. A pustule resembling those exhibited,‡ but having in some cases a more diffuse inflammation or efflorescence around it. 2. Slight febrile symptoms, such as a pulse somewhat accelerated, a whitish fur on the tongue,

* *On Vaccine Inoculation;* London, 1806, p. 69.

† Plate 1, No. 2, *ibid.*

‡ Plate 1, No. 5, *ibid.*

languor and heaviness, but without any eruption. 3. A red efflorescence on the skin, which continues for a day or two. 4. Febrile symptoms for two days, attended with an eruption of some hard minute pustules, which usually disappear in three days. 5. Purpura or petechiæ sine febre on the seventh day after inoculation."

Dr. Willan adds "that similar symptoms take place after small-pox in persons who have been inoculated with variolous matter, *especially in children* of an irritable constitution who have a *delicate skin*."* Of such he quotes and details several instances, adding, "These, with other similar cases on record, should warn us against the indiscriminate use of variolous inoculation as a test of the correctness of vaccination, or for any other purpose.†"

Dr. Jenner mentions similar facts;‡ and in his very interesting paper,§ detailing two cases of

* Do we not over estimate the results of revaccination in many subjects, *particularly children*, who often appear *especially* susceptible of its influence?

† To this I may add that I have seen variola propagated by the short and trivial fever induced in a child by variolous testing. The child had no eruption; a small vesicle, like a modified vaccine vesicle, on the arm, with some areolæ on the eighth day, with a few hours' fever, and no subsequent inconvenience. The mother, who had been vaccinated twenty-three years before, was evidently thus infected, and had a mild varioloid attack. We see therefore that not only the *limpid* and *adhesive lymph* of these "*test*" *varioloid* vesicles will produce variola by inoculation; but that the *fever*, though slight and fugitive, which sometimes attends such "testing" is occasionally specific and infectious. But these warnings *now* are needless; the 3rd and 4th of Victoria, c. 29, will doubtless altogether supersede them.

‡ *Further Observations on the Variolæ Vaccinæ*, 1799;—also *Continuations of Facts and Observations on the Variolæ Vaccinæ*, 1800.

§ *Medico-Chirurgical Transactions*, vol. i., 1809, p. 269.

small-pox conveyed to the fœtus in utero, the parents at the time being free from variola, (by which he endeavours to show that the *continued* susceptibility to variola remains in all through life, though in all it is not equally manifested) remarks, "My principal object in the foregoing observations is to guard those who may think fit to inoculate with variolous matter, after vaccination, from unnecessary alarms: a pustule may sometimes be thus excited, as on those who have previously undergone small-pox; febrile action in the constitution may follow, and, as has been exemplified, a slight eruption."*

At a very early period after the production of the variola vaccine lymph, I had an opportunity of testing *both stocks* by variolous effluvia, having to vaccinate several children who were living and sleeping in the same rooms with patients labouring under variola, and in every instance the vaccinated escaped. Very soon after the introduction of the second stock of lymph into use at the Small-pox and Vaccination Hospital in London, Mr. Marson very kindly tested one patient, soon after vaccination, by variolous inoculation, without any local or constitutional result. Subsequently to that time I have tested twenty-one patients at different periods, the chief particulars of which will be found in the following table.

* See also *Medical and Physical Journal*, in 1803-4-5, &c.;—Dr. Labatt's *Address to the Medical Practitioners of Ireland on Vaccination*, &c. &c., p. 103.

Table showing the sex, age, period after vaccination with variola vaccine *lymph, number and kind of scars, and results of the test of variolous inoculation of twenty-one subjects.*

No.	Sex.	Age.	Period after vaccin.	Number and kind of scars.	Results.
		Years.	Months.		
1	Girl	11½	5	3 very fine scars	Two papulæ from the 3rd to 5th day, then declining; 6th, gone.
2	Girl	8½	5	5 very fine scars	Three papulo-vesicular elevations on the 4th day; declining on the 5th day; desiccating on the 6th day; dark brown crusts on the 7th day.
3	Boy	8½	5	2 large, 2 small	Two papulo-vesicular elevations on the 5th day; declining on the 6th; desiccating with brown crusts on the 7th.
4	Girl	8	5	4 fine scars	Two papulo-vesicular elevations on the 5th day; enlarged, with slight areolæ, on the 6th; small silvery white vesicles, with bright red areolæ, containing a few drops of limpid adhesive lymph, on the 7th; bluish vesicles, with pulsating areolæ, on the 8th; declining on the 9th; desiccated on the 10th.
5	Boy	7½	5	4 fine scars	Two papulo-vesicular elevations, enlarging with tawny jagged areolæ, on the 6th; declining, with yellowish brown crusts, on the 7th; incrusting on the 8th; small brown crusts, like modified vaccine, *forcibly* removed on the 12th; numerous hard warty papulæ on the face, trunk, and limbs, on the 14th; several suppurated on the 16th day; all decadent on the 18th. Very slight fever for a few hours at commencement of eruption.
6	Boy	7½	5	3 small scars	Three papulo-vesicular elevations on the 7th day, with small areolæ; took a few drops of adhesive limpid lymph; declined on the 9th; yellowish crusts on the 10th.
7	Boy	1½	5	4 very fine scars	Two papulo-vesicular elevations on the 5th day; large glistening vesicles like vaccine on the 7th day, with small areolæ; pale flesh-coloured vesicles, with patches of brown crust on hard bases, on the 8th; very fine vesicles (like vaccine of the 14th day) this 9th day; "tamarind-stone" crusts on the 10th day.

No.	Sex.	Age.	Period after vaccin.	Number and kind of scars.	Results.
		Years.	Months		
8	Girl	4	12	4 small scars	Three papulo-vesicular elevations on the 5th day; increasing with areolæ on the 6th; declining on the 8th, with minute brown crusts.
9	Girl	7	13	4 good scars	Three papulo-vesicular elevations on the 5th day; with areolæ on the 6th; and limpid adhesive lymph on the 8th; declining on the 9th, with yellowish brown crusts.
10	Girl	6	13	4 good scars	Precisely the same.
11	Girl	4	13	4 very good scars	Nearly the same; but vesicles larger with more areolæ on the 8th day, with a few hours' fever and pain in the arm; all declining on the 9th day.
12	Boy	11	14	4 fine scars	Trivial fugitive inflammation for two days.
13	Girl	7	26	2 good scars	Two papulæ on the 4th; on the 6th gone.
14	Girl	2½	29	4 fine scars	Two papulo-vesicular elevations on the 6th day, with slight areolæ; declining on the 8th; desiccating with brown crusts on the 10th day.
15	Girl	5	29	2 small scars	Two papulo-vesicular elevations on the 6th day; with slight areolæ on the 7th; declining and desiccating on the 8th and 9th days.
16	Boy	4	29	1 small scar	Two papulo-vesicular elevations on the 5th day; slight areolæ on the 6th; declining on the 8th; encrusted on the 10th.
17	Girl	5	30	2 small scars 1 large scar	Two papulæ on the 6th day; vesicular on the 7th; ash-coloured vesicles on the 8th, on dark red base; decadent and encrusted on the 10th day.
18	Boy	5	30	1 fine scar	Two vesicular tubercles on the 5th day, with areolæ; encrusted on the 7th day.
19	Boy	2½	30	1 fine scar	Two fugitive inflamed spots; 6th day, gone.
20	Girl	17	30	5 good scars	Four small tubercular vesicles on the 5th day; decadent on the 6th day, no lymph; 9th day, brown crusts.
21	Boy	14	31	5 fine scars	Two vesicular tubercles on the 6th day, with areolæ; advancing, with pain in axilla and head, and slight fever, on the 8th day; rapidly decadent on the 9th day; with brown crusts on the 10th.

Observations.—The boy, 5, was the only patient on whom any eruption appeared. It was of the

form described by Willan in the above summary (4),* for it partook of the double character: hard elevated papulæ; hard elevated papulo-vesicular eminences, some desiccating, some rapidly suppurating, all disappearing on the fourth day. The vesicles from inoculation having encrusted, like modified vaccine, the crusts were removed before the skin was sound; and two days afterwards he was shown to me in the state described. He had had no indisposition at any period of the testing process, but seemed rather hot just before the eruption; but was cheerful, and with reluctance kept within doors, taking his accustomed diet. The greater part of the eruption resembled the vesicular lichen occasionally seen after vaccination. This boy had four remarkably fine vaccine vesicles; but never showed during their rise, progress, or decline, the slightest constitutional disturbance, not even acceleration of the pulse. The child, 7, was brother to the above. The test vesicles were very fine, and could not be distinguished from large modified vaccine vesicles; he had no fever; his vaccine vesicles were remarkably fine, and the constitutional symptoms were well marked. Both patients had very clear florid skins. The children, 9, 10, 11, were of one family; all had clear florid skins, on which their vaccine vesicles had been beautifully developed. No. 11 had the finest vesicles, and suffered most from fever; she indicated also most influence from the variolation, but had no eruption; the others had no fever. The girl, 15, had but *one* good variola vaccine vesicle; she was vaccinated

* *On Vaccine Inoculation*, Plate 2, No. 6, and Plate 2, No. 2.

direct from the *first* variolated sturk,* and had scarcely any indisposition; but was tested with Bryce's test with a satisfactory result. The boy, 16, was vaccinated from the same *direct* source; he was attacked with gastro-intestinal fever soon after vaccination; his only vaccine vesicle rose very tardily and languidly, but ultimately acquired a large size.† The subjects, 18 and 19, soon after vaccination from the early removes of the second variolated sturk,‡ were attacked with fever of dentition, and one retarded small vesicle only rose on each. The boy, 21, had shown early and well marked symptoms from his vaccination—the second remove from the second variolated sturk. He complained of pain in the arm and axilla from the test vesicles, had distinct fever and slight loss of appetite from the seventh to the ninth day, but stated that his symptoms were *trifling* compared with those which he felt from the vaccination.

In none of the other cases was there the slightest constitutional disturbance, the patients running about and playing with their companions, eating and drinking, and enjoying themselves in all their accustomed ways, unconscious, like their friends, of the nature of the process to which they were subjected, and insensible of anything but topical trivial inconvenience. No suspicion could arise in the mind of any one; for it was impossible to distinguish the vesicles when they did appear from modified vaccine of different degrees of perfection, the limpidity and adhesiveness of the few drops of contained lymph, and the small dark brown "tamarind-stone" crusts, when the vesicles were unbroken and

* *Transactions*, vol. viii., p. 382. † *Ibid*, p. 404. ‡ *Ibid*, p. 385.

unirritated, deceived several medical men to whom I exhibited the patients. Under the microscope the concrete lymph exhibited the beautiful reticulated appearance said to be characteristic of efficient vaccine.* But I have seen this and the *linear* appearance, mentioned by the same author, in the *concrete* lymph of the *verrucous vesicle* of the cow before alluded to.† The variolous matter employed was recent, taken on the sixth and seventh day, perfectly limpid, and some from the confluent and malignant variety; it was taken in tubes, or dried on *large* "store" points, repeatedly charged. In applying the test, clusters of superficial scratches were made on the skin, over an area as large as an orange-pea or a horse-bean, from two to four such patches on each patient; the variolous lymph was then discharged from the tubes, or rubbed off the points on the abraded surface.‡ In *every* instance *some effect* resulted, as above described.

* *Recherches microscopiques sur la composition du fluide vaccin, par M. Dubois, (d'Amiens.)—Bulletin de l'Academie Royale de Médecine, Avril* 30, 1838.

† See page 224.

‡ This method is adopted by many in vaccinating. It is, as pointed out by Mr. Estlin, of Bristol, the only sure mode of successfully vaccinating with dry lymph which has been kept some time. He recommends broad and long points—(*Medical Gazette,* December 27th, 1839,)—to be *repeatedly* charged from good vaccine vesicles, *from time to time,* and carefully excluded from the air. When required for use, the lymph may be carefully rubbed off on such clusters of scratches by the aid of the serous or slight sanguineous exudation therefrom. By this means I have repeatedly revived the variola vaccine lymph after three, four, six, and nine months, in all its potency. "Store points," thus properly charged from *good and early lymph,* (not the draining of vesicles,) may form an efficient substitute for crusts, and are more convenient. Some of Mr. Badcock's *variola vaccine* lymph—(*Brighton Herald,* March 20, 1841,)—with which he kindly favoured me, I thus revived, in admirable perfection, after four months. It was wrapped up in gold-beater's skin, and enclosed in tin foil. I usually roll mine up in cotton wool, and enclose it in a small corked phial full of the same material.

I need scarcely say that I did not venture to use any of the limpid adhesive lymph from the *variolous test vesicles* on subjects which had not undergone vaccination; but I did, in three or four instances, employ it on the same arm with the other variolous matter. It was clearly possessed of inferior power; for while the latter was capable of exciting a papulo-vesicular result, the former or modified lymph scarcely excited on the same arm more than a slight fugitive inflammation, or a hard, red, lymphless tubercle. These experiments, though necessarily limited by time and circumstances, it is presumed will suffice to prove the main point for which they were instituted, and thus furnish the only remaining evidence required to establish the identity of the *variola vaccine* artificially obtained and the vaccine naturally or casually yielded by the cow.

General and concluding observations.—In the foregoing cases, as well as in many others embodied in my former "Observations," it will be seen that endeavours have been made, not only to acquire information relative to the phenomena of the casual vaccine, but to accumulate facts illustrative of the pathology and œtiology of the disease in its primary form. That for this purpose, especially, the course of inquiry has necessarily been directed to the investigation of facts bearing on the age, state of health, condition, and circumstances of the animal or animals affected; the character of the incursive, eruptive, and secondary symptoms of the disease; the season of the year, and the state of the weather when it has been observed; the nature and character

of the soil, and the condition of the pasturage where it has been found. Whether sporadic, epizoötic, or enzoötic; whether prevalent during epidemic or endemic variolous conditions of atmosphere; whether clearly or presumably traceable to the direct contagion or infection of human variola. But no one can be more sensible than myself of the small amount of positive information at present obtained from this locality on many important points of this enquiry, and of the utter inadequacy of these *contributions* to furnish more than a mere fragment in the history of the subject. But if they were far more extensive and complete than time and circumstances and the various difficulties so often indicated and deplored have allowed, they would still be insufficient for such purpose; for it must be manifest that the history of this disease cannot be complete unless it embody the results of the most comprehensive investigations, made under far better auspices, in various localities, in other countries, and in different climates. Hence it is greatly to be desired that members of our profession, favourably situated, should earnestly direct their attention to the subject, and emulate the practice of many distinguished human and comparative pathologists on the continent, and some of our brethren in the East. Comparative pathology has engaged the attention of the most eminent human pathologists of ancient and modern times, with acknowledged benefit to humanity and unquestionable advantage to science; and it is truly gratifying to know that talents and attainments of the highest order are at this time directed to these pursuits, at once furnishing incon-

testible evidence of their interest and importance, and conveying the best assurance of eventual success. "*De même que l'anatomie et la physiologie comparées,*" say the distinguished pathologists alluded to,* "*jettent une vive lumière sur l'anatomie et la physiologie humaines, de même l'etude des maladies chez les animaux servira à dissiper bien des doutes et des incertitudes qui regne encore dans la pathologie de l'homme.*"

If comparative anatomy be necessarily allied to that of man, if the relations of organization that exist between all the mammalia establish between the larger animals and the human species evident analogies in all the physiological and pathological changes which take place, comparative pathology must offer results highly useful to the study of general medicine. The knowledge of the diseases of animals, when it becomes more advanced, will contribute to diffuse new light on the diseases of man, and perhaps bring to perfection methods of cure or prevention, owing to the facility of multiplying on the inferior animals experiments which we cannot attempt on man. These sentiments, expressed by one of the ablest and most accomplished of modern veterinary practitioners and writers,† are well worthy of our attention, and it is hoped that their correctness may be abundantly established by the zeal and ability of enlightened pathologists of the present era; and although the

* *De la Morve chez l'homme, chez les solipèdes et quelques autres mammifères, par MM. Breschet et Rayer.—Bulletin de l'Academie Royale de Médecine, le* 10 *Fevrier,* 1840.

† *Dictionnaire de Médecine, de Chirurgie, et d'Hygiène Vétérinaires, par M. Hurtrel d' Arboval. Tome deuxième; Art. Epizootie.*

genius and patient research of a Jenner may be required for the complete realization of all these hopes, yet in so ample a field there are few who may not be usefully and advantageously occupied. In the department of comparative pathology, comprehending the exanthemata, much remains to be accomplished, notwithstanding its diligent and successful cultivation in some parts of the continent since the time of Jenner. What has hitherto been effected there cannot suffice however to supersede, much less to paralyse, the efforts of his countrymen. But they must arouse themselves, and no longer exhibit a practical indifference to the researches to which he so successfully devoted the energies of his great mind. A comprehensive study of the exanthemata of the mammalia, especially of the bovine species, is not less essential to a correct diagnosis of the vaccine disease, than to the formation of a just estimate of its nature and causes. It is greatly to be lamented that, in England at least, veterinary instruction is generally confined to so limited a range, and that, of course, so little is conveyed relative to *general* pathology, and particularly in those branches which relate to the history of epidemics and human exanthemata. On the other hand, it is not less to be regretted that a comprehensive knowledge of comparative pathology is not made an integral part of a sound medical education.

It has been well observed by the author above quoted, in an able and enlightened article on this subject:* "*Nous croyons qu'on ne s'est pas encore assez occupé de la vétérinaire sous le rapport de la médecine générale et comparée, et que lorsqu'on se sera livré à ce genre de recherches et d'études avec*

tout le soin, toute l'attention, et la persévérance nécessaires, on pourra découvrir des analogies qu'ont échappé jusqu'ici à toutes les investigations." Such interchange of knowledge would be reciprocally advantageous, and productive of incalculable advantages to the sister science. Many of the difficulties which at present attend the formation of a generally satisfactory theory of the vaccine influence appear to me to admit, and likely eventually to receive, a more complete solution from comparative pathology than some persons are disposed to expect or believe. It behoves us at all events to prosecute these and analogous enquiries to a successful issue, aided by an attentive consideration and careful study of the valuable information which modern veterinary medicine is now capable of affording. The rapid advances which this science has made of late years, the zeal, the learning, and the ability, now devoted to its cultivation, are not only highly creditable, but must prove equally beneficial to science and humanity. Hence we are encouraged to believe that the hopes so fervently and so eloquently expressed by the late M. Hurtrel d'Arboval may at no distant period be amply realized:—"*Espérons que des hommes instruits, profitant de l'analogie qui existe entre les propriétés organiques et vitales de l'homme et des animaux, parviendront un jour à transporter dans la vétérinaire les faits et les documens qui servent de base à la médecine humaine, et que leurs efforts parviendront à reverser sur celle-la les trésors de celle-ci, en comblant quelques unes des lacunes qui restent encore dans notre art.*"

* *Dictionnaire de Médecine, de Chirurgie, et d'Hygiène Vétérinaires. Tome sixième; Art. Vétérinaire.*

EXPLANATION OF THE PLATES.

PLATE I.

This plate is referred to at page 217; it represents the casual vaccine on the right temporo-frontal region of Joseph Brooks, with recedent areola. With the exception of being rather more florid, it very much resembles the vaccine vesicle on the white skin of the cow's udder, and, like that, yielded lymph only from its centre, and that slowly and scantily, after the removal of the central crust.

PLATE II.

This plate is referred to at pages 217 and 218; it represents the casual vaccine vesicles on the thumb and finger of the same individual, on the same day, as that of the preceding plate.

PLATE III.

This plate is referred to at page 243; it represents casual vaccine vesicles on the hand and thumb of Joseph White on the 2nd of June, 1841, from Dorton.

PLATE IV.

This plate is referred to at page 243; it represents the casual vaccine vesicles on the hand and thumb of the same individual, but a day later than those depicted in the preceding plate. The vesicle on the thumb is still flat on the surface; but the centre is more discoloured, yet without any visible depression; the central crust has increased. The vesicle on the hand is much more depressed in the centre, and the bases of both vesicles are more elevated.

PLATE V.

This plate is referred to at page 244; it represents the casua vaccine vesicles on the thumb, hand, and face of the same individual, in a more advanced stage than those in the preceding plate.

Fig. 1. The vesicle on the thumb, with a portion of slough visible through an opening in the bluish or slate-coloured centre, the margin partially vesicated, the base flatter and duller.

Fig. 2. The vesicle on the back of the hand, irregularly puffed at its margin, puckered and depressed at its centre, where the slough is visible.

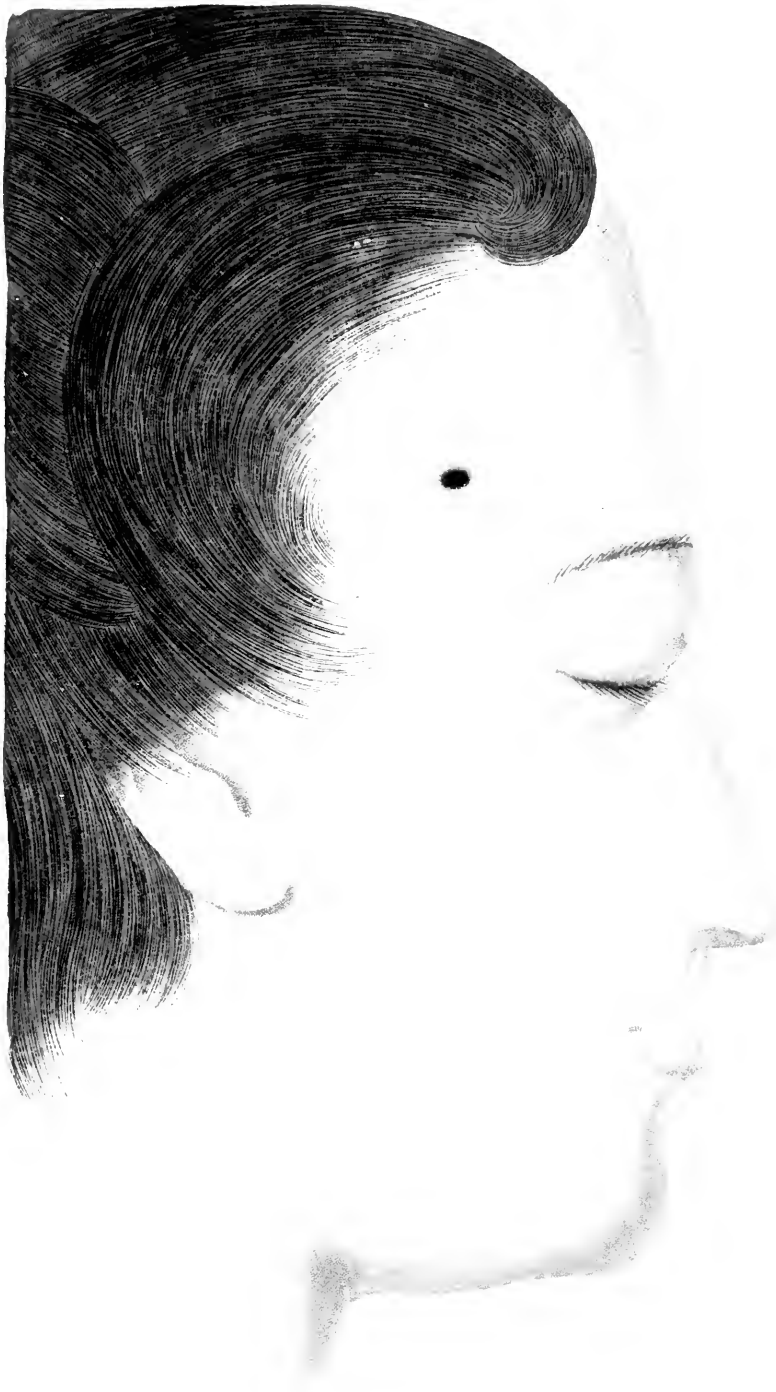
Fig. 3. A small flesh-coloured vesicle, containing a light brown acuminated crust, situated on the left cheek. It was first noticed on the 2nd of June—seven days before—and in all probability arose from a *late* casual application of lymph to the part affected. Similar vesicles are often seen on the cow.

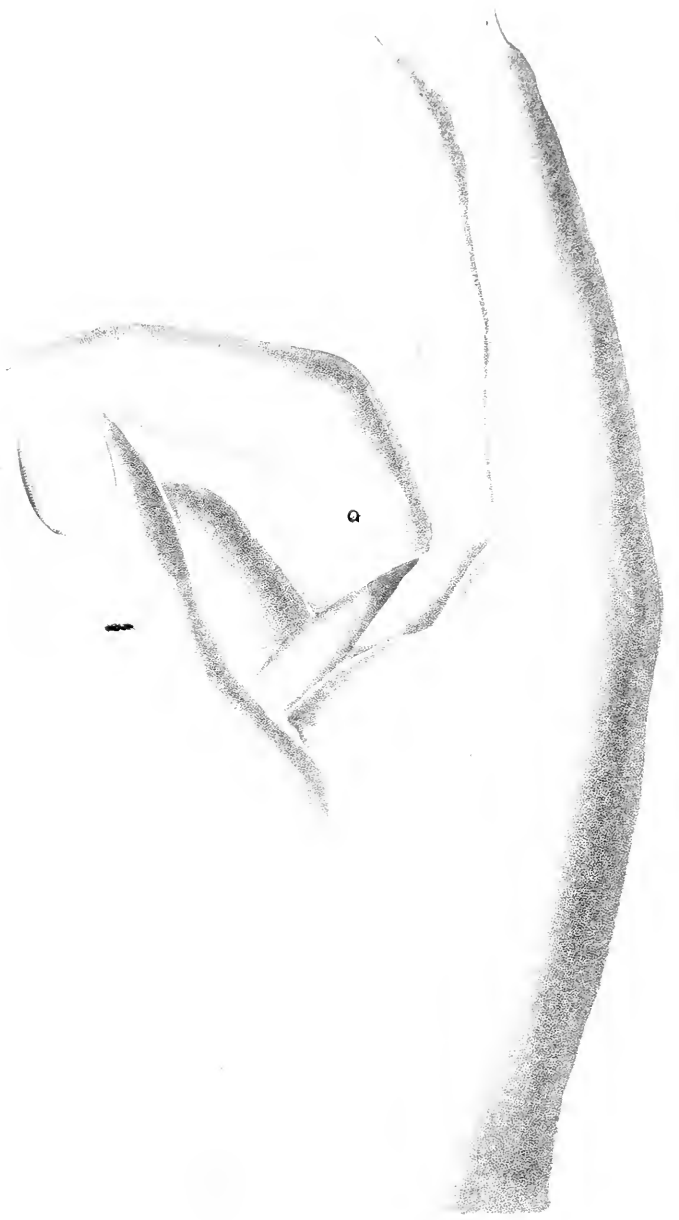
PLATE VI.

This plate is referred to at page 244; it represents the ulcers on the thumb and hand, resulting from the casual vaccine vesicles of the same patient, as are depicted in the three preceding plates.

Fig. 1. The ulcer on the thumb, not very deep, and granulating.

Fig. 2. The ulcer on the back of the hand, deep, and not yet granulating, surrounded with a well-defined, elevated, and indurated border. Both these ulcers exhibit some of the characters pointed out, at page 229, as worthy of attention in discriminating the eruptions on the teats and udder of the cow at a late stage.

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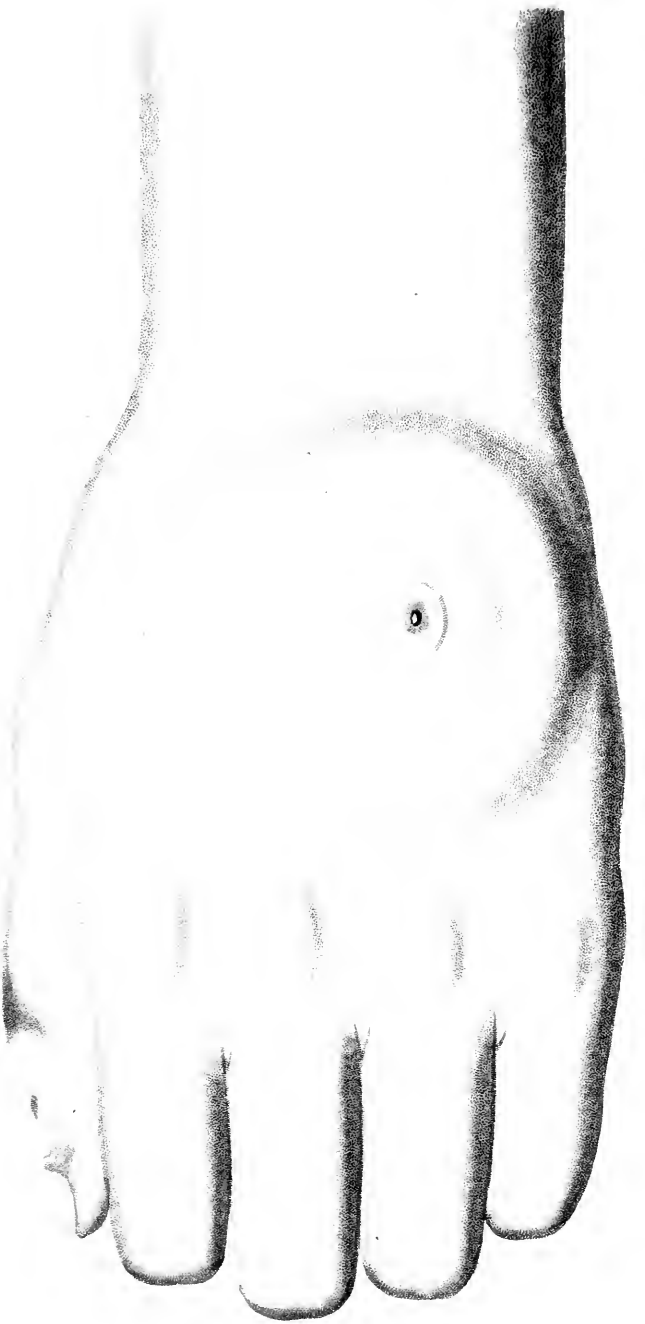

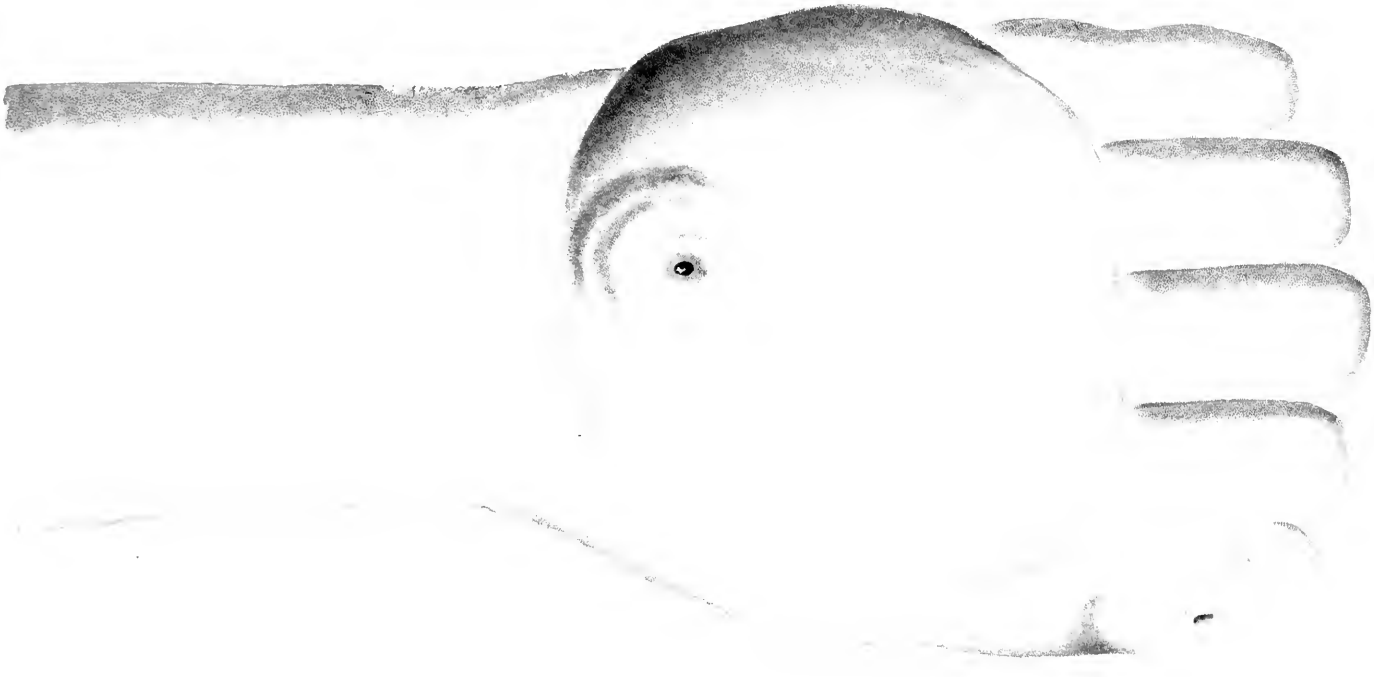

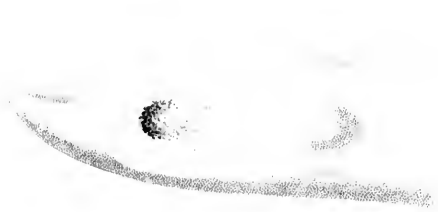

PART IV.

REPORTS OF INFIRMARIES AND DISPENSARIES.

ARTICLE VIII.

REPORT OF CASES AT THE CHESTER GENERAL INFIRMARY,

During the Years 1838, 1839, and 1840.

BY THOMAS BEAVILL PEACOCK, ESQ.,
House Surgeon to the Royal Infirmary, Edinburgh,
(late House Surgeon to the Chester General Infirmary.)

1.—*Table showing the cause of death, as ascertained by dissection, in one hundred cases of disease or accident, proving fatal, in* 1838–39–40, *at the Chester General Infirmary.*

Cause of death.	Total.	Male.	Fem.	Ages.	Mean Age.
Abscess between the skull and dura mater	1	0	1	45	...
..... in the glands of neck, bursting during sleep into trachæa ...	1	1	0	19	...
..... in the upper part of the thigh; chronic bronchitis	1	1	0	50	...
Apoplexy	2	1	1	40, 56	...
Aorta, aneurism of	2	2	0	48, 72	...
Brain, disease of	2	1	1	23, 35	...
Bladder, rupture of	1	1	0	38	...
..... and urethra, injury of, from attempt to pass catheter for retention of urine; infiltration	1	1	0	59	...
Bronchitis, acute, with enlarged heart	1	1	0	38	...
Colon, fœcal accumulation in	1	0	1	23	...
Leg, diffuse inflammation of, from slight injury; pneumonia	1	1	0	18	...
Fever, typhus	20	13	7	...	35
..... scarlet	3	2	1	...	10
Fracture of base of skull and injury of brain	3	3	0	11, 40, 57	...
..... of base of skull and femur.....	1	1	0	9	...
..... of spine.....	2	2	0	33, 45	...
..... of neck of femur; bed sores...	1	0	1	70	...

Cause of death.	Total.	Male.	Fem.	Ages.	Mean age.
Fracture of femur, humerus, and clavicle; injury of head; suppuration between dura mater and skull	1	1	0	60	...
..... of leg, comminuted; diffuse inflammation; pneumonia; diseased kidney	1	1	0	43	...
Heart, diseases of	7	3	4	...	31
Hernia, strangulated	3	1	2	28, 50, 55	...
Hemorrhage from femoral artery after amputation	1	1	0	19	...
Hip, disease of	1	1	0	11	...
Kidney, abscess in, and diseased bladder	1	1	0	21	...
Liver, cirrhosis of	2	2	0	38, 46	...
..... fungoid disease of	1	1	0	40	...
..... tubercle of, suppurating and bursting into peritoneal cavity	1	1	0	61	...
..... disease of; granular tubercles of parietal portion of peritoneum; ascites and anasarca; gangrene of legs; diseased kidney	1	1	0	50	...
..... enlargement of, with ulceration of mucous membrane of colon, and tuberculous mass pressing on pyloric portion of stomach; symptoms of obstruction at pylorus	1	1	0	28	...
Phthisis	12	3	9	29	...
Pericarditis; peculiar disease of solitary glands of mucous coat of small intestines	1	0	1	11	...
Pleuritis	1	0	1	19	...
Empyema	1	1	0	55	...
Hydrothorax	1	1	0	45	...
Hydropericardium; chlorosis	1	0	1	43	.
Pneumonia	2	2	0	41, 53	...
Purulent deposits after amputation	4	4	0	14, 30, 37, 48	...
Spine, caries of; lumbar abscess	2	2	0	18, 42	...
..... atlas, dentata, and occiput, caries of	1	1	0	13	...
Stomach, malignant ulcer of, with carcinomatous masses in the liver and pancreas	1	0	1	48	...
..... stricture at pylorus, with perforating ulcer; peritonitis	1	1	0	42	...
..... softening of coats at greater curvature; subacute gastritis	1	0	1	30	...
Uterus, fungoid disease of	1	0	1	63	...
..... and ovaries, fungoid disease of	2	0	2	20, 54	...
..... scrofulous tumours of; death from hemorrhage	1	0	1	26	...
..... Puerperal phlebitis of	1	0	1	19	...
..... inflammation, terminating in abscess, in cavity of	1	0	1	50	...

2.—*Table of morbid appearances found in the head and abdomen in twenty cases of fever.*

Diseased appearances.	Male.	Fem.	Age.	Period of death.
1.—Brain not examined. Ulceration of Peyer's plates in ileum, cœcum, and ascending colon	1	0	45	17th day
2.—Fluid under the arachnoid, in the ventricles, and at the base of the brain; red dots numerous. Glandulæ aggregatæ throughout the ileum distinct, and elevated above the surrounding mucous membrane; near the ileo-cœcal valve ulcerated.....	1	0	35	13th day
3.—Effusion of serum beneath the arachnoid; turgescence of vessels of pia mater. Kidneys engorged, right with granular degeneration	1	0	65	6th day
4.—Considerable subarachnoid effusion; pia mater exhibiting diffuse redness. Some redness of mucous membrane at pyloric extremity of stomach and in the ileum, ulceration in the cœcum, and colon to the sigmoid flexure	1	0	35	20th day
5.—Very slight increase of fluid beneath the arachnoid; some increased turgescence of vessels of pia mater	1	0	19	8th day
6.—Flattening of the convolutions and obliteration of the intergyral spaces; dryness of the membranes and bright salmon-colour of the substance of the brain; softening of the fornix; sero-albuminous matter floating in the ventricles; firm adhesions of membranes at the base	1	0	26	49th day
7.—No disease detected; but general paleness and flaccidity of viscera	1	0	30	19th day
8.—Subarachnoid effusion elevating the membrane much above the sulci, especially on the left side; membranes opaque and rough; turgescence of vessels of pia mater; hemisphere of of a salmon-colour. Body not examined	0	1	15	19th day
9.—Extensive effusion of clear fluid under the arachnoid; convolutions small and widely separated; paleness of substance of brain; dark grumous blood in the iliac space	1	0	50	15th day

Diseased appearances.	Male.	Fem.	Age.	Period of death.
10.—Slight effusion of straw-coloured semi-gelatinous fluid beneath the arachnoid; roughness of membranes, as if from effused lymph; fluid copious in the ventricles, especially the left, and at the base. Body not examined. ..	0	1	20	21st day
11.—Very slight subarachnoid effusion; brain pale. Ulcers extending at intervals from the commencement of ileum to ascending colon	1	0	25	52nd day
12.—Subarachnoid effusion; pia mater readily separable from convolutions; rougness of arachnoid at base; increase of red dots on slicing the brain	1	0	75	10th day
13.—Slight subarachnoid effusion, and fluid in ventricles	0	1	60	14th day
14.—Subarachnoid effusion, especially at base. Ulceration of mucous follicles in ileum and cœcum	0	1	30	20th day
15.—Considerable effusion beneath arachnoid and in ventricles	0	1	60	14th day
16.—Subarachnoid effusion of serum, great; much also in ventricles; pia mater readily separable from convolutions; engorged state of cerebral vessels ...	1	0	30	18th day
17.—Brain not examined. Extensive ulceration in ileum, cœcum, and ascending colon	1	0	37	22nd day
18.—Brain not examined. Ulceration of Peyer's glands in an early stage, commencing one foot from termination of ileum, and extending to the transverse arch of colon	0	1	37	16th day
19.—Copious subarachnoid effusion; convolutions small, and pia mater easily peeling off them; fluid in ventricles; kidneys much engorged	1	1	27	11th day
20.—Brain healthy; slight subarachnoid effusion, and in the ventricles. Thorax and abdomen not examined	0	1	21	47th day

Note.—The formation of this table was suggested to me by a similar one published in the *Medical Almanack* for 1839, by Mr. Curling, giving a statement of the results of dissection at the London Hospital, in 1835 and 1836.

The first of these tables does not indicate the cause of death in all the cases proving fatal in the Infirmary during the three years over which it extends, as in several cases examinations were not obtained, and the results of a few dissections not performed in the institution are inserted in it.

The deaths during the three years ending March the 25th, 1841, averaged 41 for each year, out of an annual admission of 630 patients; the mortality was therefore 1 in 15, or $6\frac{1}{2}$ per cent., a proportion about equal to that which obtains in other institutions of a similar description, and much less than in most of the larger hospitals. Fever was, as might be expected, the most fatal disease. The total number of cases of fever admitted in the years 1838, 1839, and 1840, were 53, 57, and 67, respectively, and the deaths 6, 9, and 9; the proportion thus afforded being 1 death in $7\frac{3}{8}$ patients, or 13.6 per cent. Of the cases admitted, 86 were males, 91 females; of the 24 fatal cases, 13 were males and 11 females; the proportion of mortality was therefore 14.3 per cent. in males, and 15.1 in females. The average period of residence in the house of the cases cured was 25.4 days; the longest having remained 67, the shortest only 7 days. Of the cases proving fatal, the mean period of death was the nineteenth day from the commencement of the symptoms; the earliest having taken place on the sixth day, the patient being cut off by a suppression of urine coming on at the commencement of macculated fever during convalescence from acute rheumatism; the latest death was on the fifty-second day, the patient dying gradually exhausted by intestinal disease.

The ages of 157 patients admitted with fever were—

Under 10 years of age	2
From 10 to 15	16
..... 15 to 20	36
..... 20 to 30	63
..... 30 to 40	20
..... 40 to 50	10
..... 50 to 60	2
... .. 60 to 70	7
Above 70	1
The mean age	25.7

The ages of those in whom the disease proved fatal were—

From 15 to 20	2
..... 20 to 25	7
..... 25 to 30	4
..... 30 to 40	3
..... 40 to 50	3
..... 60 to 70	4
Above 70	1
The mean age	36.8

This table shows the greater fatality of fever at advanced than at early periods of life: under 40, the average mortality having been only 10.22 per cent.; above that age, 40 per cent.

The presence of the peculiar eruption, considered by many writers both abroad and at home as characteristic of the contagious form of typhus fever, has been very uncertain in its appearance in the fever of Chester. In 1838 and 1839 it occurred very rarely, and in 1840 only in 18 cases out of 53, though throughout the course of all the cases its appearance was attentively looked for. It has been suggested that, as it generally appears at an early period, and is often very evanescent, it may, in the cases in which

it is not met with in some parts of the country, have ceased before admission. With a view to test this point, I have compared the periods of reception of 25 patients in which the eruption was found with those of 27 in whom it did not appear, and I find that the mean period of admission in the former cases was the sixth, in the latter under the eighth day, a difference too slight to allow of our founding any opinion upon it. It has indeed often happened, that cases at about the same period of the disease, and equally severe, have been admitted into the ward together, in some of whom the eruption was present, and in the others it could not be detected, although no material difference in the general peculiarities of the cases existed.

There would indeed seem to be a peculiar condition of the atmosphere by which the spread of all fevers attended with eruptions is facilitated, though the specific virus on which they may depend be different: thus, in 1839, small-pox was extremely prevalent in Chester, and proved fatal amongst children who had not undergone vaccination, and attacked also many who had the vaccine disease, though generally slightly. Scarcely had this ceased when scarlatina appeared, and prevailed extensively throughout 1840. Erysipelas also was of very frequent occurrence as an idiopathic disease, and complicated almost every case of wound or operation; and during this time the eruptive form of typhus, which for the previous year and a half had been seldom seen, occurred in a considerable number of cases. The circumstances under which it was met with were generally such as favoured the idea of its

spreading by contagion. Thus it often appeared in families who had come recently from Ireland, or some of the large towns, in which it was known to be prevalent, and spread through the several members of the family in succession. In one instance however it appeared in the county gaol in a prisoner who had been several weeks in confinement, and in two or three others in persons who resided as servants in country situations. The portion of the town from which the mass of the cases were admitted is extremely deficient in drainage, and the people are in a state of great wretchedness.

Of 17 cases in which a careful note was taken of the course of the eruption, in 4 only was its first appearance observed, all the others presenting it more or less copiously at the period of admission: in one of them it appeared on the third day, and continued till the seventh; in a second, on the fourth, and continued till the eighth; in a third, on the thirteenth, and remained till the twenty-first; and in the fourth, in which it also appeared on the thirteenth day, it continued till the period of death, on the sixteenth.

Of those cases in which it was present at the period of admission—

In 3 admitted on the 6th day it continued till the 11th, 12th, and 16th.
... 3 ..... 7th ..... 12th, 14th, and 17th.
... 1 .....11th ..... 19th.

In 3 cases which proved fatal on the tenth day, it was found at the period of admission; on the fifth day, in 2 of the cases; and on the eighth, in 1. In 2 in which it was noticed on the sixth day at the time of admission, the period of decline was not observed.

The eruption appeared first on the lower part of the abdomen, and spread gradually over the chest, shoulders, and thighs, and in a favourable case generally declined a day or two before marked amendment in the symptoms occurred. In cases proving fatal in the early stages, it was observed, from being a delicate rose-coloured eruption, to become more purple, and to fade completely on pressure, at length assuming the form of petechiæ or vibices.

The youngest person on whom the eruption was detected was a child, aged $2\frac{1}{2}$ years; six members of the same family having had fever in succession; the oldest was a man of 75.

In the cases attended with eruption, the fatality was much greater than in those without it; 6 out of the 18 occurring in 1841 having died, while of the remaining 35 cases only 3 terminated unfavourably. The convalescence of the cases cured was not however slower in the former than in the latter.

Hæmorrhage from the bowels existed in 5 out of the 177 cases included in this report; one of them proved fatal; in two epistaxis existed conjointly, and in a third blood was discharged from the nose and mouth. In one case a profuse epistaxis took place suddenly; but the patient, though having a very protracted convalescence, ultimately recovered. Sloughs occurred in three or four instances, of which one proved fatal.

The urine, it has been stated, becomes alkaline in the typhoid state; in most of the best marked cases its state was duly tested, and in none was it found so, though in two cases where typhoid symptoms supervened, on external injury, the urine was highly ammoniacal.

The table of morbid appearances, it will be observed, presents 17 cases in which the head, and the same number in which the chest and abdomen were examined ; in three instances the head only having been opened, while in other three it was not examined. Of these cases a correct report was kept of the symptoms during life, so that a comparison can be instituted between them, and the morbid appearances detected.

In the case marked 6, in which the convolutions were found flattened, and the intergyral spaces obliterated, the fornix softened, &c., the patient was seized, during convalescence from a mild attack of fever, with coma, brought on by intense mental excitement. He became again sensible, but continued delirious at times till the period of his death, on the forty-ninth day. He died suddenly, and had no paralytic symptoms. In case 10, in which small patches of lymph existed on the membranes of the hemispheres, with slight effusion of fluid there, and distension of the ventricles, especially the left, with serum, the patient, after having complained of slight pain of head, intolerance of light, restlessness, &c., became suddenly comatose on the fourteenth day, and was paralyzed on the right side of the jaw. In case 8, the patient, whose brain exhibited great subarachnoid effusion, especially on the left side, with turgescence of the vessels of the pia mater, and roughness from small shreds of lymph, suffered at the time of admission from slight headache, then became torpid, then comatose, and died on the nineteenth day, having suffered for some hours before death from spasmodic twitching of the right

arm. In cases 3, 9, 12, and 19, the subarachnoid effusion was great, and the convolutions small and widely separated. In one only was the brain unusually vascular, and in one the pia mater was turgid with blood, and rough to the touch. In one the brain was decidedly pale. These cases were characterised by the usual symptoms,—restlessness, suffused eyes, slight delirium, stupor, subsultus tendinum, and finally coma, with involuntary discharges; in all, retention of urine, with partial suppression, came on a day or two before death. In case 16 the symptoms in the early stages were those of high cerebral excitement, incessant restlessness, and delirium, rendering it difficult to keep in bed, yet with sensibility when spoken to. These gradually gave place to low muttering delirium, picking at the bed clothes, and stupor. Here a great amount of effusion existed under the arachnoid and in the ventricles, and the cerebral vessels were much engorged. In cases 2, 4, 13, 14, 15, and 20, the disease was characterised by the usual nervous tremors of the hands, alteration of voice, deafness, stupor, but sensibility when spoken to, some delirium, &c. In these, effusion of serum was the only appearance which could be regarded as morbid in all but two, in one of which the red dots were more than usually numerous, and in the other the membranes were tinged with blood. In cases 5, 7, and 11, no morbid appearances existed to any extent in the brain, yet in one of them delirium was at first high and incessant, and continued to recur at intervals throughout the disease, and in the others the symptoms were similar to those last referred to.

If then, in the above table, we except the three first cases, in which the marks of inflammatory action having been present in the brain and membranes were detected after death, and in which the symptoms corresponded during life, as instances rather of subacute inflammatory disease, we shall find that, of the remaining 14 cases, in 3 no appreciable disease was detected, and in 11 others the only morbid condition was effused serum on the membranes or in the ventricles, combined in 3 cases with turgescence of the vessels, and in 2 with increase of red dots. In several of these cases it is also stated that the convolutions were small, and widely separate, and the pia mater readily separable from the convolutions—circumstances which, taken in connexion with the age of the subjects and the well-known fact that few brains of elderly persons are examined in which serous effusion is not found to a greater or less extent, combine to show how little stress can be placed on these appearances, as explaining the symptoms present during life. The fluidity of the blood in most patients dying of fever, and the position which they assume in the last stage, will also account for the increase of red dots at the back of the brain, and in part for the engorgement of the posterior parts of the lungs, met with so often in their examination.

In the abdomen it will be observed that the diseased appearances were more decided and more certain. The peculiar disease of the plates of Peyer, considered by some French writers as constituting the proximate cause of the typhoid fever of the continent, and on the presence or absence of

which so much stress has been laid in the much agitated question of its identity with the fever of this country, occurred in an unusual proportion of the 17 cases examined. In seven of these ulceration was found either in the ileum, cœcum, or colon; in an eighth the follicles were enlarged and distended as if with solid matter, and a ninth also presented them elevated above the surrounding mucous membrane, but without any appearance of morbid deposit. In one of these cases, which proved fatal on the tenth day, the plates of Peyer were distinct, and elevated above the adjacent mucous membrane, and on each oval space there existed six or eight elevated pimples, which felt rough to the finger, and, examined with a magnifying glass, were found to present an open aperture at the apex, and to contain a yellowish-looking matter: considerable vascularity existed in the mucous membrane around. In another, in which death took place on the thirteenth day, it is stated that the plates were very distinct, elevated above the surrounding mucous membrane, and presenting numerous small openings on their surfaces, with larger ulcers here and there, near the valve of the cœcum. In a third, proving fatal on the sixteenth day, the plates were large, oval, and studded with openings along a considerable extent of the ileum, and near the cœcum the mucous membrane covering the whole plate was either ulcerated or so soft as readily to pull off. The vascularity in this case was distinctly greater around the plates than in other portions of the canal. The follicles did not present any appearance of solid matter in them.

In four other cases the appearance of the follicles was entirely gone, and large ulcers with elevated and thickened edges and irregular surfaces occupied their places. These ulcers generally commenced a foot or two from the ileo-cœcal valve, and extended to the ascending colon. In some instances however they commenced higher up, and in one case were confined to the colon, in the whole extent of which they were found. In the small intestines they took the shape and direction of the plates, being oval, with their long diameter in the course of the canal. In the cœcum however they were extremely irregular in shape, and in the colon extended across the gut in the course of the folds of mucous membrane, forming in some cases almost entire rings. In the eighth case, the patient dying on the fifty-second day, the small intestines were studded with ulcers about the size of a sixpence, from the commencement of the jejunum to the lower portion of the colon. Their margins were depressed, and the surface smooth, and evidently in progress of healing. In several places the ulcers had perforated the intestinal tunics, and effusion of the contents of the canal into the abdomen had only been prevented by adhesions to the omentum or other portions of the viscera.

I have several times examined the large follicles in an early stage of the disease with a powerful lens, and should conceive that what has been regarded by some French writers as a specific morbid deposit is simply the thickened follicular secretion, the result of inflammation ; that process, so far as my observations serve me, preceding the pre-

sence of the deposit, and being in the early stage confined to the neighbourhood of the follicular plates. Ulcerations also would appear to commence on the orifices of the follicles, and then, being gradually enlarged, unite together, and form the large oval ulcer found in the advanced stage of the disease. I have never detected anything which bore the appearance of a slough in these cases. On examining the reports of these cases during life, I find that in one in which the plates were distinct, and had a few elevated pimples on them, with open apices, diarrhœa was present when the patient was admitted, on the seventh, and continued till his death, on the tenth day. In the next, in which the patient died on the thirteenth day, and the patches were found distinct, but with few ulcers, tenderness of the abdomen and tympanitic distension were present from the commencement of attack; and for the last three or four days three or four stools occurred daily. In the case proving fatal on the sixteenth day the symptoms were those of general prostration and some tenderness of abdomen, but evacuations were procured only by the exhibition of medicine, till the last day, when three stools took place spontaneously. In this case, it will be remembered, the ulceration was apparently commencing. In the others, which terminated between the seventeenth and twenty-second days, and in which ulcers occupied a larger or a smaller portion of the intestinal canal, diarrhœa existed for several days before death, and the indications of abdominal disease were present from the first. In one of these, a copious discharge of blood took place from the bowels on

the fourteenth day; and in the one in which the ulcers had only been prevented perforating the peritonæal cavity by adhesions to the parts around, the symptoms of peritonæal inflammation took place on the ninth day. The case which proved fatal on the fifty-second day, and exhibited extensive intestinal disease in progress of cure, was characterized by repeated attacks of diarrhœa throughout its course.

In the table there is inserted a case which proved fatal from pericarditis, the sequel of neglected rheumatism. The patient was eleven years of age, and the lower part of the small intestines was found studded with pimples, firm and gritty to the feel, and of a dark colour, which also implicated the mucous membrane around, and was visible externally. She did not appear to have suffered from diarrhœa, and died about an hour after being first seen; a peculiar vesicular eruption was present on the skin. Of the cases attended with the follicular disease, the average period of death was the twenty-second day; of those in which it did not exist, the eighteenth.

The same uncertainty which attended the appearance of the roseolous eruption in the cases admitted, was found to obtain in those in which the follicular ulceration was detected after death. In three of these cases the eruption was met with, and in a fourth an eruption made its appearance on the abdomen on the fourteenth day; but as it occurred at so late a period, and did not entirely fade upon pressure, it was regarded as petechial. In two cases, in one of which the roseolous eruption

attended the early stage, numerous miliary vesicles appeared on the abdomen on the eleventh and eighteenth days.

The morbid appearances detected in the abdomen, independent of the disease of the intestinal canal, were, in several cases, a softened state of the spleen; in one, a deeply congested condition of the mucous lining of the pylorus and duodenum; in one, grumous blood effused in the iliac space; and an engorged state of the kidneys in three out of the four cases in which retention of urine existed, one of which presented an aggravated example of the granular degeneration. In the thorax, the mucous lining of the bronchi was often more injected than usual, and the lungs, especially at the posterior portions, engorged, more particularly where the agony had been much prolonged. The larger vessels generally contained partially coagulated blood, and the heart was frequently more or less flaccid.

On reviewing the details of these examinations it must, I think, be conceded that the fever of Chester bears, if these three years afford a fair sample of the fever generally prevalent, an unsually close resemblance to the dothinenterite of France. It may however be supposed that these cases do not present a fair proportion. On this I have only to remark, that during the same period I have had occasion to attend three cases in which the disease was cut short by well-marked symptoms of perforation of the bowel, and effusion of its contents into the peritonæal sac, in which no examination could be procured. One of these cases

occurred in the infirmary, and is included in the twenty-four deaths numbered in this report. The violent peritonæal inflammation supervened on the ninth, and death took place on the fourteenth day. The two other cases occurred in the out-practice of the institution. Perhaps much of the difficulty which attends this subject, founded on the frequent occurrence of the ulceration in the fever of certain localities, and its almost invariable absence in that of others, may in some degree depend on the comparative periods at which the cases ordinarily prove fatal. Thus, in the cases recorded in this report, the average period of death was the $20\frac{1}{2}$th day; and here it occurred in eight out of seventeen cases. In forty-seven dissections taking place at the Royal Infirmary of Edinburgh, and recorded by Dr. John Reid, the average period of death was the $12\frac{1}{2}$th day; and here only two cases occurred. When fever proves fatal at so early a period, it is probably by the disorder of the nervous system, the secondary lesions not having had time to develope themselves.

Of the three cases of scarlatina entered on the table, in one, death took place on the first day of illness, and of course before any eruption had appeared on the skin. The patient, a boy of nine years of age, was seized in the morning, though he had felt poorly a little before, with pain of head, suffused eyes, stupor, and sore throat, and extreme prostration of strength: he died in the course of the evening. The brain was greatly engorged with blood, but presented no effusion of urine; and the lungs, more especially the left, were excessively congested at the lower and posterior part; they felt

solid, and did not crepitate. Several members of the family were labouring under scarlatina at the time.

The second case was that of a girl of fourteen, who passed favourably through a mild attack of scarlet fever, with affection of the throat, till the fourteenth day, when the febrile symptoms underwent great increase, attended with pain and tenderness of the knee, wrist, and elbow joints; and she died in two days. Copious effusion of pus was found to have taken place into all these joints.

The third case, that of a boy seven years of age, was fatal from effusion into the sac of the pleura, coming on suddenly after an attack of scarlatina, by which he had suffered so little as not to be confined to bed; about three pints of fluid existed in the two sides of the chest, the heart was large for the subject, and the kidneys much engorged; the other organs very pallid.

The cases of scarlet fever admitted in 1840 were twenty, of whom four died; in seven of these the disease presented a mild course, in ten the throat was much affected, and in four the disease assumed a malignant type. The average age of the patients was eighteen years; and the time of residence of those cured, sixteen days. The deaths took place in two on the second day from the seizure, in one on the ninth, and in one on the thirteenth. Of the cases treated in the house anasarca followed in only one, and in which it was brought on by incautious exposure to the weather on leaving the ward. One case was admitted labouring under the consecutive dropsy, and proved fatal.

The cases of phthisis, in number twelve, presented no peculiar features. In one, death seemed to take place from the copious deposition almost equally throughout both lungs; the tubercle was in its solid state everywhere but beneath the left clavicle, where one small cavity existed; the patient was under treatment only sixteen days. A second case proved fatal from the supervention of pneumonia. In five, tuberculous ulceration of the intestines was coexistent. One case presented a remarkable congenital atrophy of the left side of the brain, which weighed only twelve ounces and two drachms, troy, while the weight of the right hemisphere was seventeen ounces and seven drachms; the whole brain weighed thirty-six ounces and six drachms. The atrophy implicated chiefly, but not entirely, the superior portions of the anterior and middle lobes, the parts containing the ventricles being nearly of the same size on both sides; the anterior lobe, measured along the fissura Sylvii, was on the left side one inch and seven-tenths, on the right two inches and nine-tenths. The membranes of the brain were extensively elevated by fluid, and the diploe remarkably thick, so that the inequality was not very conspicuous externally. This case was that of a nearly lunatic female, thirty-five years of age; the right leg was shorter and smaller than the left, so that she walked on the ball of the great toe, and the arm was contracted. I have since seen a case in which, from the similarity of the deformity and flattening of the opposite side of the skull, I have no doubt a similar atrophy of the brain existed.

The cases of diseased heart consisted of—first, recent endocarditis, chiefly affecting the mitral valve, the sequel of neglected rheumatism. Second, adherent pericardium, hypertrophy of the left ventricle, and granular degeneration of the kidney. Third, ossification of the mitral valve, contraction of its orifice, and permanent patency of the aortic valves; also from rheumatism. Fourth, great contraction of the left auriculo-ventricular aperture, and extension of the folds of the mitral valve, proving fatal by hemiplegia, dependant on softening of the corpus striatum. Fifth, extensive ossification of the coronary arteries, and almost entire closure of their orifices by a plate of bone at the root of the aorta, with hypertrophy of the left ventricle; the case was characterised by well-marked symptoms of angina, and death resulted from overloading the stomach with food. Sixth, tumour on the margin of the left auriculo-ventricular aperture, giving rise to dry gangrene of the toes. Seventh, imperfect closure of the mitral valve from adhesion of one of its folds to the lining membrane; hypertrophy of both ventricles. In this instance there was also found a morbid condition, not of very frequent occurrence: an ulcer about the size of a shilling was situated at the pylorus, and had penetrated to the under surface of the liver, which was adherent to the coats of the stomach at that part; it was thus prevented perforating the abdominal cavity, and had cicatrized. The patient suffered from symptoms of diseased pylorus for several months, but had been entirely relieved from them some time previous to her death.

Of the four cases in which fracture of the bones of the skull occurred, in two the fissures extended across the petrous portions of the temporal bones on both sides, in one it took the same course on the right, and in the fourth on the left side. In one, a boy, who had been thrown from a horse, and dragged a considerable distance along the pavement, by his foot catching in the stirrup, the sphenoid bone was also found loosened from its connexions. In two of these cases the lateral sinuses were lacerated on both sides, and had led to very extensive extravasation of blood; and in another the same vessel was torn on the left side, a large opening existed into the longitudinal sinus at its point of bifurcation, and the middle cerebral artery was ruptured. In all the brain was extremely disorganized. In two cases bleeding from the ear occurred after the accident. In one of these a small portion of bone was found entirely separated, and raised up immediately over the internal ear, so as to allow fluid freely to pass through it; in the other the fissure was wide apart, and in this instance serum also escaped during life from the ear, and the collapsed and loose condition of the arachnoid, presented on examination after death, showed that it had escaped from beneath that membrane. One of these cases, the last, died about an hour and a half after admission, the patient having been sensible after recovering from the shock of the accident till immediately before his death. Two others lived eight and twelve hours respectively, and were insensible throughout. The fourth rallied from the first effect of the injury, so as to become

partially sensible, and survived thirty-eight hours; he was however perfectly deaf, and on examination the auditory nerves on both sides were found torn through. Two of these cases were the effect of direct violence; the others of falls on the vertex.

In the case of rupture of the bladder the patient lived three weeks; adhesions were found around the margin of the pelvic cavity, matting the viscera together, and preventing the extravasation of the urine into the abdomen. Into the sac thus formed, the catheter had been passed through a large opening in the fundus of the bladder. Acute inflammatory symptoms came on shortly after the accident; he then partially recovered, and could void his urine without mechanical assistance; but ultimately sank with typhoid symptoms.

In the case of fracture of the spine, the patient lived nine weeks and two days. The body of the seventh dorsal vertebra was fractured throughout, the cord torn across, and the parts so displaced that its two extremities were fully an inch apart; the articulating processes of several of the lower vertebræ were also broken off. At the period of death, new bone had been extensively formed to reunite these. In the second, the spinous process of one of the dorsal vertebræ was broken off, and an effusion of blood found in the medulla spinalis. No paralysis was produced, and the patient seemed to sink from the shock of the injury.

Of the cases of operation I proceed to speak more at large. During the period over which this report extends there were performed twenty-one capital amputations: of these, thirteen were of the thigh,

of which four were performed for accidents; two on the immediate receipt of the injury, of which one recovered; and two were secondary, and took place on the sixteenth day after the accident: both of these proved fatal. Of the nine cases which were performed for disease, two died.

Of the leg, six amputations are recorded: of these, four were for accidents, three of which proved fatal, being performed soon after the injury; the fourth, also unsuccessful, took place on the seventeenth day. The two cases where the operation was undertaken for disease, both recovered.

Of the arm, two amputations occurred: one primary, one secondary, and both were successful.

The result is as follows—

11 amputations for cases of disease, fatal, 2
10 ..... accident, ... 6

One of the cases for disease, recorded as fatal, was for an inverted fracture of the femur, of fifteen months' duration. The ends of the bones had previously been removed. This case proved fatal by supervention of a slight hæmorrhage seven days after the operation.

6 of these operations were for relaxation of the cartilages or scrofulous diseases of the knee.
2 for caries of the tarsus and ankle joints.
2 for fungoid disease of the head of the tibia.
1 for compound fracture of the neck of the humerus.
1 ..... elbow joint.
1 for gangrene of the leg, following simple fracture of the thigh, from laceration of the femoral artery by the lower fragment.
1 for gangrene of the leg from severe contusion of the soft parts.
6 for compound fractures of the leg and ankle.

The periods of death were—

2 within twenty-four hours after the operation.

1 on the 8th day.	1 on the 17th day.
1 ..... 11th day.	1 ..... 28th day.
1 ..... 14th day.	1 ..... 30th day.

In one of the fatal cases the patient proceeded favourably till the end of the third week, the stump being then nearly healed. In one, secondary hæmorrhage came on on the twenty-eighth day, when the stump, with the exception of a small sinus over the bone, was healed; the femoral artery was tied, and the patient ultimately recovered. In four of the fatal cases a careful examination of the body was instituted: in two, purulent accumulations were found in the knee joint of the amputated limbs; in a third, there was combined with these a similar abscess in the elbow of the opposite arm; in the fourth, matter had formed near the trochanters and on the surface of the ilium. In two other cases of external injury, one a comminuted fracture of the leg, and the other a bruise of the knee, both followed by diffuse inflammation, purulent deposits were detected in the lungs.

The cases of hernia operated upon during the same period were five: of these only two recovered. Three of the cases were femoral, one inguinal, and one scrotal; the three fatal cases were two of them femoral and one scrotal. The period, after the commencement of the strangulation, at which the operation was performed, was in one nineteen hours and a half; in another, five days; and in the third, six days. In the two successful cases, strangulation had existed nine and a half and sixteen

hours. In one of the three fatal cases, death took place from intense peritonæal inflammation : in the other two, the intestine was gangrenous when operated upon ; the tumours in both cases had existed for years, and it was only by accident that they came under medical notice, so little alarm had the symptoms of strangulation excited. Both were operated upon immediately, on the failure of the usual means.

HONORARY CORRESPONDING MEMBERS.

AUSTRALIA.

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BELGIUM.

N. Lebau, M.D., Physician in Ordinary to the King of the Belgians, First Physician to the Military Hospital at Brussels.

BRAZILS.

Luis Vicente De Simoni, M.D., Secretary of the Imperial Academy of Medicine of Rio Janeiro.

DENMARK.

C. Otto, M.D., Professor of Pharmacology and Forensic Medicine in the University of Copenhagen.

EAST INDIES.

W. B. C. Shaughnessy, M.D., Professor of the Institutes of Medicine in the Medical College, Calcutta.

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John Johnstone, M.D., F.R.S., Birmingham	1834–35
J. Kidd, F.R.S., Oxford	1835–36
Edward Holme, M.D., Manchester	1836–37
Henry C. Boisragon, M.D., Cheltenham	1837–38
Edward Barlow, M.D., Bath	1838–39
Thomas Jeffreys, M.D., Liverpool	1839–40
George Steed, M.D., Southampton	1840–41
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THE FOLLOWING ARE

THE PRINCIPAL OBJECTS

TO WHICH THE ATTENTION OF THE

PROVINCIAL

MEDICAL AND SURGICAL ASSOCIATION

IS DIRECTED.

1st.—COLLECTION of useful information, whether speculative or practical, through Original Essays, or Reports of Provincial Hospitals, Infirmaries, or Dispensaries, or of private practice.

2nd.—Increase of knowledge of the medical topography of England, through statistical, meteorological, geological, and botanical inquiries.

3rd.—Investigations of the modifications of endemic and epidemic diseases, in different situations, and at various periods, so as to trace, so far as the present imperfect state of the art will permit, their connexions with peculiarities of soil or climate, or with the localities, habits, and occupations of the people.

4th.—Advancement of medico-legal science, through succinct Reports of whatever cases may occur in Provincial Courts of Judicature.

5th.—Maintenance of the honour and respectability of the profession, generally, in the provinces, by promoting friendly intercourse and free communication of its Members; and by establishing among them the harmony and good feeling which ought ever to characterise a liberal profession.

THE LAWS
OF THE
PROVINCIAL MEDICAL AND SURGICAL ASSOCIATION.

1st.—THAT a Provincial Medical and Surgical Association be formed.

2nd.—That the Association be managed by a President, two Secretaries, and a Council.

3rd.—That the several Officers be appointed annually, by a General Meeting of Members convened for that purpose, at whichever of the principal towns may be appointed; the place of such Meeting being prospectively notified each year.

4th.—That at this Meeting shall be presented a Report, prepared by the Secretaries, of the general state of the Association, its proceedings, and pecuniary accounts; the Report to be afterwards printed, and a copy supplied to every Member.

5th.—That at this Meeting one of the Members shall be appointed to give, at the next Annual Meeting, an account of the state or progress of Medical Science during the last year, or an Oration on some subject connected with Medical Science, or a Biographical Memoir of some eminent cultivator of Medical Science, who may have resided in the Provinces.

PRESIDENT.

6th.—That the office of President be honorary, and conferred on some senior Physician or Surgeon of eminence, resident in any of the provincial towns comprised in the circle of the Association.

SECRETARIES.

7th.—That the two Secretaries be resident in Worcester, the place of publication, their duties being to attend to the printing of the *Transactions*, and to correct the press; to be present at the meetings of the Council, and to keep the minutes thereof; to correspond with the Members of the Association; to receive and submit to the Council all papers transmitted for publication; and to keep the financial accounts of the Association.

8th.—That the Council consist of —— Members, to be selected from the principal provincial towns. The Council, with whom must rest the chief responsibility of publication, to have full power of deciding on all papers transmitted, and the consent of three of its Members must be obtained before any paper can be published. It shall also be the duty of the Council to receive the subscriptions, when due, in their respective districts.

9th.—Every Member shall receive weekly a copy of the *Provincial Medical and Surgical Journal.*

REGULATIONS OF THE DISTRICT BRANCHES.

10th.—That Members of the Association be at liberty to form District Branches wherever it may suit their convenience.

11th.—That in order to facilitate the formation of such Branches, and maintain uniformity amongst them, the General Council provide suitable instructions for the guidance of those who may unite in instituting them.

12th.—That conformity with these instructions be further ensured, by the initiating proceedings and organization of each Branch being submitted to the General Council, for their revision and approval.

13th.—That the District Branches be free to govern themselves as their respective Members may think fit; but that the by-laws ordaining the special government be submitted to the General Council previously to their taking effect, in order to guard against the possibility of any such by-laws contravening the fundamental laws of the Association.

14th.—That all Members appointed to offices by the District Branches be forthwith enrolled as Members of the General Council, on the appointments being officially notified to the General Council, it being highly expedient that all who engage in the executive management of the District Branches should be also Members of the General Council.

15th.—That the expenses incurred by the District Secretaries in conducting the proceedings of the District Branches be defrayed from the general fund, provided such expenses do not, in any instance, exceed one-seventh part of the guinea subscribed by each Member enrolled in the District Branch.

16th.—That if any circumstance arise in the formation of District Branches which calls for a larger expenditure than what is allowed by the foregoing resolution, such expenses, provided they do not exceed one-fourth of the guinea, may be allowed, by a statement of the circumstances being made known to the General Council.

17th.—That each Member, on applying for admission, be nominated by two Members, as a pledge of eligibility.

18th.—That at each Annual Meeting the place of meeting for the ensuing year shall be announced.

19th.—That any Member wishing to propose a new law, or an alteration in an existing law, must send notice of his intention to one of the Secretaries three months previous to the Anniversary Meeting, which will be circulated with the Report of the Council.

20th.—That the Association appoint Honorary Members at the Anniversary Meetings only.

21st.—That the Association appoint Members in foreign countries to be styled "Honorary Corresponding Members," from whom communications, respecting the state of medicine in those countries, is expected to be received.

BENEVOLENT FUND.

22nd.—That a Medical Benevolent Society, under the restrictions proposed in the Report of the Committee presented to the Anniversary Meeting at Oxford, be connected with the Association.

PAYMENT OF SUBSCRIPTIONS, &c.

23rd.—Each Member of the Association to pay one guinea admission, and the same amount annually afterwards; the subscription to commence from the 1st of January each year, and to be considered as due, unless notice of its being withdrawn be given to one of the Secretaries antecedently to the year for which it would be payable; for such subscription each Member shall receive a copy of each part of the *Transactions* published. Each volume to contain a list of all the Members.

24th.—That those Members who have not an opportunity of paying their subscriptions to a Member of the Council resident in their district, are requested to pay it through the medium of their own Bankers, to Messrs. Robarts and Co., London, for Messrs. Berwick and Co., Worcester, on account of the "Provincial Medical and Surgical Association."

25th.—That all Papers, and other Communications, be addressed to the Secretaries, Dr. Hastings or Mr. Sheppard, Worcester, and forwarded carriage free.

26th.—That Messrs. Berwick & Co., Old Bank, Worcester, be the Treasurers of the Association.

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